INVESTIGATING NUTRITION KNOWLEDGE AND EATING HABITS OF YOUTH IN SELECTED SCHOOLS IN KINONDONI MUNICIPALITY, TANZANIA

LEONIDA SYLVESTER LUBALLA

A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE MASTER DEGREE OF SOCIAL WORK OF THE OPEN UNIVERSITY OF TANZANIA

2017

CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the Open University of Tanzania a Dissertation entitled: **"Investigating nutrition knowledge and eating habits of youth in selected schools in Kinondoni Municipality, Tanzania"**, in partial fulfilment of the requirements for Master's Degree of Social Works, Faculty of Arts and Social Sciences, Department of Sociology and Social Work.

……

Dr. Simon A Waane

(Supervisor)

Date: ……

COPYRIGHT

DECLARATION

I, **Leonida Sylvester Luballa**, do hereby declare that, this dissertation is my own original work and that it has not been presented and will not be presented to any other University for similar or other degree award.

…….

Signature

…….

Date

DEDICATION

This study is dedicated to my lovely parents, Mr. and Mrs. C. F. Luballa, my son and daughter-in law, Mr. and Mrs B. Bukhi Mabele, my grandsons, Joshua James Mdoe, Lubango Cristiano and Buchulezu Nathan, my Niece, Sabuyi Cesilia Moses. They were a source of encouragement. I feel proud of them and there is nothing I enjoy in my life than their love and togetherness. I greatly thank Our Almighty God for having them.

ACKNOWLEDGEMENT

First and foremost, I would like to thank Our Almighty God, King of Kings. His many blessing have allowed me to strive for excellence and stay on guided path. I appreciate for the support and advice I received from my Supervisor, Dr. Simon Waane as was always ready to attend to my calls and enquiries. I thank also Prof. H. Rwegoshora, he was crucial to my success in this study and I thank him for the countless hours he took away from his family and his work to help me. Also to my co-University of Dar es Salaam workers, to mention few; Prof. Mbago, Dr. Lucy Mkinga, Prof. Mshandete, Dr. F. Silangwa for their interest of the study, their suggestions helped me to stay focused and push myself for a better final draft.

I extend my appreciation to my employer, the University of Dar es Salaam for allowing me to pursue further studies, especially the Department of Reproductive and Child Health Clinic.

Special thanks go to my family especially my son's family, Mr. and Mrs. B. M. Mabele (Atubene), for encouraging me. I also thank my grandsons, Lubango and Buchulezu and my niece, Cesilia S. Moses because their messages they sent far from China through WhatsApp, containing God's word, enabled me to work tirelessly. Special appreciation should also go to my beloved Father and Mother, Mr. and Mrs. Sylvester and Cesilia Luballa who besides being too old, more than 90 years, encouraged me to succeed. Furthermore, I would like to thank Dr. Ng'ondi, Dr. Fauzia Mohamed and Mr. Johnas Buhori who prepared me

theoretically and gave me all directions and guidelines which helped a lot to collect the data successfully from all respondents.

Last but not the least I thank the Kinondoni Municipality for allowing me to collect data at Mlimani, Mapambano and Mugabe primary schools and Alpha High School. I specifically thank all youths who participated in this study. Special thanks should go to my fellow master of social work students in academic year 2013/2015 for their encouragement and support.

ABSTRACT

The study was conducted in order to investigate nutrition knowledge and eating habits for the youth who are in education Institutes, from primary school to secondary schools and colleges and Universities within Ubungo Ward at Kinondoni Municipal in Dar es Salaam region. Thus, eating habits and lack of proper nutrition information were highlighted as major aspects of malnutrition. Ubungo ward was the study area. The ward has all kinds of education institutes, which the study used as samples: three primary schools, one secondary school and students from different colleges at the University of Dar es Salaam. Research methods and instruments used were; interview, observation, focused group discussion, questionnaires and check list. This administered to 138 students. Results indicate a positive relationship between nutrition knowledge and eating behaviour and the consequences of malnutrition. As 72% of students have knowledge of nutrition and its importance for their academic performance and enjoy their meals, take care of eating time, while 62.3% are neutral (86 students) found that they do not know the importance of taking balanced meal and the proper time of taking their meals. SPSS version 16 was used to analyze data and cross tabulation was done to clarify realities from respondents' responses. The study recommends that, curricula in all levels of education should mainstream nutrition knowledge. Conclusion, school social workers to be employed to the Educational Institutes as they are responsible for helping individuals, families and community on assisting them to cope with their problems facing to improve lives; and can work hand in hand with students, teachers and parents/guardians.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

LIST OF ABBREVIATIONS

CSFII	-	Continuing Survey of Food Intake by Individuals
DD	-	Diarrheal Diseases
DRIs	-	Dietary Reference Intakes
FAO	-	Food Agricultural Organization
KIE	-	Kenya Institutes of Education
NCDs	-	Non-Communicable Diseases
SPSS	-	Statistical Package for the Social Sciences
SUN	-	Scaling Up Nutrition
TFNC	-	Tanzania Food and Nutrition Centre
UNICEF	-	United Nations Children's Fund
WHO	-	World Health Organization

CHAPTER ONE

1.0 INTRODUCTION

The chapter shows the background of the study, explains what the school children understand about nutrition education and their eating behaviours. The chapter also indicates statement of the problem, and talks about the broad and specific objectives of the study which made the researcher to perform the study within Kinondoni Municipal as a representative of all youth in Tanzania. Furthermore, this chapter mentions the significance of the study and its beneficiaries of the study. Verified also on conceptual frame work and its challenges.

1.1 Background of the Study

Good nutrition, health and nutrition knowledge are the key factors of global agenda. A health body and minds, comes from taken good nutrition from childhood. Thus a good dietary choice is very essential for growth and development of any human being from conception. Students from education Institutes need proper nutrition and nutrition knowledge to have healthy mind. None of these three factors alone however will suffice to achieve social and economic development; only a combination will enable progress toward a world without poverty and hunger (FAO, 2005). Nutrition education is a significant factor in improving nutrition Knowledge, Attitude and Practices (KPA) of school children, family and the community at large (Contento, 2007).Furthermore, nutrition education is an important entry point to teaching nutrition, it is not only source of nutrition knowledge, there is other entry points such as school environment, school meals, health and nutrition clubs

and school garden among others (Mbithe, 2008). Moreover, the family and community play an .important role in acquisition of nutrition knowledge and nutrition related practices. Thus, educational institutes are the ones of the main social context in which lifestyles are developed.

However, it is still difficult to associate the students' nutrition knowledge and their dietary intakes because even university students who we assume to have enough knowledge about nutrition we do not know to which extent are their everyday food choices related to their nutrition knowledge (Niclas e*t al.,* 2001). For example, it has been revealed that fresh university students in various countries assume the responsibility of choosing and preparing their meals, but unfortunately their diet is unhealthy, low in fruits and vegetables with irregular patterns of daily meal consumption and a high frequency of fast food selection (Niclas *et al.,* 2001). This is of special concern to everyone especially parents, policy makers, social workers and nutritionists since dietary habits established in this period of life can have a considerable effect on the health of individuals in the long term *(*Neslişah *et al,* 2011).

According to Neslişah and Emine, (2011), taste preferences, self-discipline, social networks, friends and peers, are among the major factors which determine the food choices of students. Another factor which, impact dietary intakes of students include physical environment such as availability and accessibility, appeal and prices of food products, media and advertising, and university characteristics such as residency, student societies, university lifestyle and exams (Neslişah *et al,*

2011). Neslişah and Emine, (2011) discovered that once they start school, the diets of students change in a less healthy direction. In view of this, the researcher wanted to establish the relationship between nutrition knowledge and dietary choices of students. The study aimed at revealing the truth about this contradiction. The information from this study will help nutrition stakeholders to plan and design targeted health programs or interventions that can effectively influence school children to make healthy dietary choices.

1.2 Statement of the Problem

Malnutrition is widespread among school children in many developing countries. Nutrition education contributes to acquisition of nutrition knowledge, attitude and practices which may lead to improve nutrition status (WHO/FAO, 1998). Despite of this nutrition education which has a potential to address malnutrition has not been given much emphasis in school curriculum in developing countries like Kenya including Tanzania. Furthermore, there is no evidence that science teachers were introduced on how to teach nutrition topics (Mbithe, 2008).

It was noted that, in school curriculum nutrition is not considered as a core subject like Mathematics, Kiswahili and English and therefore it is allocated less time in school time tables especially in primary schools (KIE, 2002). The deficit in the syllabus on coverage of nutrition education implies that nutrition knowledge and good hygiene and dietary practices could be lacking or need improvement among school children in developing countries. (Mbithe, 2008). The role of the school environment especially primary and secondary schools, family and community has

not fully exploited to address gap in nutrition knowledge and practices of school children, the study intended to find the solution.

Moreover, there are so many factors which influence food choices and eating habits but most of people believe that health food choices are influenced by the level of nutrition knowledge a person possess (Hendrie, *et al.*, 2008; Heaney, *et al,* 2011). In this regard therefore food and nutrition education is viewed as a key strategy for promoting healthy eating habits. Besides, people believe that the school is an appropriate place for promoting health food choices and eating habits (Heaney, *et al,* 2011). Unfortunately, that has not been the case because so many studies show that despite having enough knowledge about nutrition; most of the students are making unhealthy dietary choices. In view of this, the researcher wanted to establish the reasons why better nutrition knowledge does not necessarily imply healthy food choices. The study aimed at investigating students' knowledge and eating habits in educational Institutes, as they spend more times in institute's premises during lunch hours. .

1.3 General Objective

The main objective of this study was to assess nutrition knowledge and eating habit of school children aged between 14 and 24 in education Institutions within the Ubungo Ward in Kinondoni Municipality, Dar es Salaam, Tanzania.

1.3.2 Specific Objectives

The study was guided by the following specific objectives:

i) To determine the level of nutrition knowledge possessed by school children with 14 and 24 years in schools within the Ubungo Ward.

ii) To assess their eating habits from the selected school children from primary school, secondary school and college/University.

iii) To evaluate the adherence to recommendations regarding nutrition when selecting what to eat for the school children in selected schools/University/College.

1.4 Research Questions

The following research questions guided this study:

i) What is the level of nutrition knowledge possessed by school children between 14 and 24 years in schools within the Ubungo Ward in Kinondoni Municipality, Dar es Salaam City?

ii) What are the eating habits of school children with 14 and 24 years in the selected schools?

iii) Do school children between 14 and 24 years in selected schools adhere to recommendations regarding nutrition when selecting what to eat?

1.5 Significance of the Study

i) **Youths:** The obtained information will educate them on the consequences of unhealthy dietary choices.

ii) **Cooks and Canteen Attendants:** Information will help them to improve meals preparation and mix of foods.

(i) **Nutrition Stakeholders:** These include the government, public health officers or

administrators, nutritionists, social workers, teachers and health providers. Information will help them to plan and design targeted health programs or interventions that can effectively influence school children to make healthy dietary choices.

1.6 Conceptual Framework

Conceptual Framework is an analytical tool with several variables and contexts. It is used to make conceptual distinctions and organize ideas (Rodman, *et al*, 1980). The study assumes that, independent variables influence nutrition and dietary choices of school children. **Independent variable**s include access to food, care for children and women, health services and environment. Also, the study assumes that, **intermediate variables** involving economic, political and the ideological factors, government policy and Social worker. These intermediate variables influence nutrition and dietary choices of school children. These assumptions are summarized in Figure 1.1.

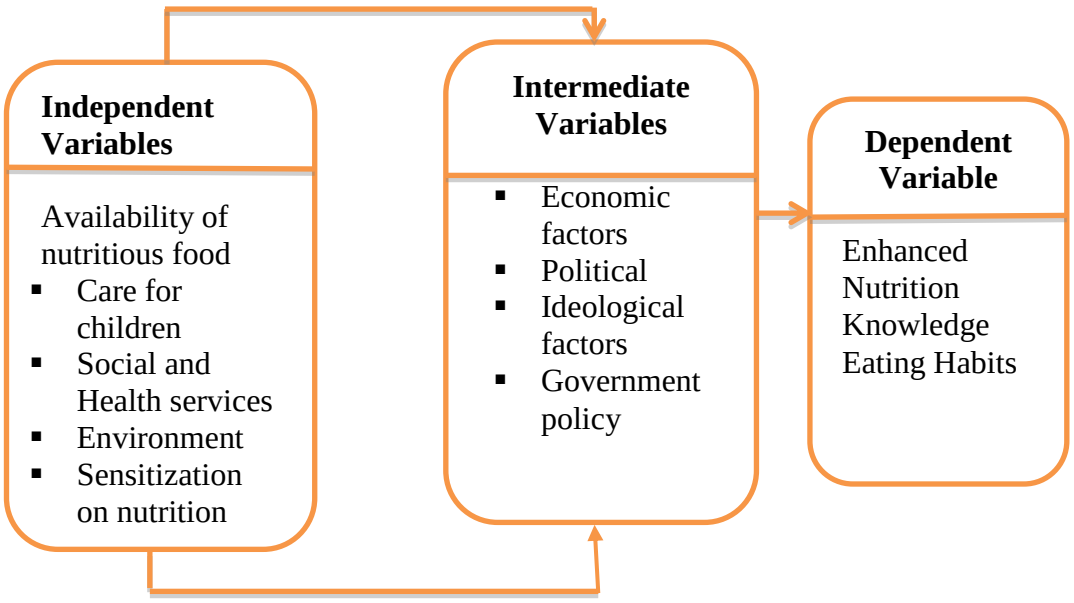


Figure 1.1: Conceptual Framework (Researcher Own Construct, 2015)

Figure 1.1; above indicated that, **Independent variables**: in access to food every youth would be alright, when there is inadequate care for children and women; youth would be in poor condition due to in adequate balanced diet due to poor care. Furthermore, health facilities, social worker duties play a big role on maintaining health for the youth, failed on that may lead to unhealthy community. As among of Social worker's responsibility is to serve as liaison between different institutions to assist clients and collaborate with other professionals including health and education to ensure clients wellness. Moreover, Social work as a helping profession is responsible for helping families, individuals, and group like the school children to cope with problems faced and improving their lives.

In intermediate variable: This comes indirect, as on economic, political and ideological factors if there will be no access of getting food he cannot be health, if there will be no peace in the country the communities cannot work for earning anything. Moreover, political will can use their power on educating people through their public meetings also as are the policy makers and government rules for the responsible country.

On Dependent variable: These two variables related direct on making youth health or unhealthy, as is supposed to have knowledge of nutritious meal, types of meal taken, frequencies and the way youth eats. A social worker also can intervene by educating the youth on taking nutritious meal, collaborating with education institutes concerning nutrition knowledge also counselling on their eating habit at the school/college environment and at their home premises by co-operating with their parents/guardians on maintaining their wellness of the school children and the families as a whole.

1.7 Assumptions and Limitation of the Study

The researcher assumed that better nutrition knowledge is directly associated with a daily diet specifically in adherence with recommendations, without considering other factors that influence food choices. In any endeavour, which deals with human beings and their environment, must face challenges. In this case, time was very limited and only four schools permitted to collect data while the Kinondoni Municipality has more than twenty primary and 49 registered community secondary schools and more than seven Universities, those children agreed to be respondents taken to represent other school children and youth in general. This study faced a number of limitations. They include unwillingness of some targeted respondents to participate. Also, the study was challenged by insufficient budget.

1.8 Operational Definitions

Adolescence: means to grow, being pre-adult, or youth, teenage years, puberty

Anaemia: Is a condition in which the number of red blood cells or their oxygen carrying capacity is insufficient to meet physiologic needs.

Anorexia nervosa: Is a psychological disorder usually occurring on young women that is characterized by an abnormal fear of becoming obese.

Balanced diet: Is the food which has mixed food from all groups of food which has all nutrients needed for the body and must be eaten a more than two times per day.

Body Mass Index: Is a measure determined by a person's age, height and weight

Bulimia nervosa: Is a serious life threatening eating disorder that affects primary young women characterized by o eating and compensatory behaviour.

Educational Institute: Is a place where people of different ages gain education including elementary schools and Universities.

Food: Is a composition of nutrients in the form that can be eaten and ultimately utilized by the body to provide the consumer with good health status.

Health: Is the state of being free from illness or injury.

Healthy: In good health, not diseased, Implies full strength and vigour as well as freedom from signs of disease.

Iodine deficiency: Is lucky of iodine in the foods, is the greatest cause of preventable brain damage in childhood, low dietary supply of iodine causes goitre.

Iron deficiency anaemia: is lack of iron in the blood due to lack of iron intake through poor diet intake. Other condition due to malnutrition is diabetes, too much cholesterol in the body, heart and renal diseases, all of these will be well observed and solutions will be provided to the youth.

Kwashiorkor: Is the most common and widespread nutritional disorder in developing countries; is a form of malnutrition caused by not getting enough protein in diet.

Marasmus: Is a form of severe malnutrition characterized by energy deficiency, a person/child looks emaciated, chronic wasting away of fat, muscle and tissue in the body.

Malnutrition: is a state of poor nutritional status, which is the result of inadequate or excess intake of nutrients by the body. Also can be defined as; all forms of poor nutrition, it relate to imbalances in energy and specific macro and micronutrients as well as in dietary patterns.

Model: Is a blueprint for action. It describes what happens in practice in a general way.

None-Communicable Diseases: Are diseases which are not transmitted by virus neither bacteria but caused by poor eating practices.

Nutrition: Is the end results of various process in society which end when food is eaten, followed by subsequent absorption and utilization of food nutrients by the body to provide health.

Nutrition Education: Is the process by which people gain knowledge, attitude and skills necessary for developing appropriate dietary habit.

Obesity: is an over imbalance of body fat resulting in body weight of 20% or more than average weight for the person's age, height, sex and body frame can be diagnosed by using Body Mass Index.

Overweight: Is defined as having more body fat (adipose tissue) than optimally health **Perspective:** A way of perceiving the world flows from a value position. Note: The perspective will influence choice of theory and model. Note: Payne (1997) argues that social work theory succeeds best when it contains all.

Policy: Is a written statement of commitment by a nation state.

School children: Child who attending school or who go to school

School Social worker: Are an integral link between school, home and community in helping students achieve academic success, they work directly with school.
Is a trained health professional who can assist with mental health concerned behavioural concerned, positive behavioural support with teacher, parents, and administrators as well as provide individual and group counselling/therapy.

Social Worker: a person who work with people and families to support them through difficult times and ensure that vulnerable people including children and adults are safeguarded from harm.

Social work: Is a profession concerned with helping individuals, families, groups and communities to enhance their individual and collective well-being. It aims to help people develop their skills and ability to use their own resources and those of the community to solve problem.

Theory: A general statement about the real world whose essential truth can be supported by evidence obtained through the scientific method. – Must explain in a provable way why something happens. Ex: Learning theory explains behaviour on the basis of what organisms have learned from the environment.

Undernutrition: Is inadequate food and nutrient intake or excessive losses.

CHAPTER TWO

2.0 LITERATURE REVIEW

This chapter reviews concepts and theories in nutrition knowledge as related to eating habits. The study involved surveying several literary works so as to know what is already known in nutrition knowledge and eating habits. Also the chapter includes the empirical studies and researches that relate to nutrition and eating habits of students.

2.1 Theoretical Literature Review

This study is guided by theories from social psychology, communication and Education. According to Harnack, Block and Lane (1997) for understanding eating behaviour Cognitive theory is applied as considers that knowledge seldom predicts behaviour and behaviour change. In this study context youth eating behaviour and habits are investigated. For accomplishing the study the ecological theories are applied in order to describe eating habits and behaviour. Provided that behaviour is learnt, the socio learning theory and social cognitive theories are also employed in this study in order to determine how various concepts and objectives of nutritional knowledge are understood.

Within social learning theory one has a chance for understanding the potential independent and joint influences of nutritional knowledge, beliefs, psychosocial and environmental factors on food selection and determines challenges to effective dissemination of nutrition information (Neumark-Sztainer and Palti, 1995; Harnack, Block and Lane, 1997). Within the context of the social learning theory (SLT), nutritional knowledge and other environmental factors influence dietary behaviour.

One of the criteria is whether the change in behavior is caused by the mere repeated presentation of a single stimulus or event or because one stimulus or event is paired with another stimulus or event.

The Social Learning Theory presents a challenge in terms of the approach needed to address barriers and factors that influence the dissemination of nutrition information for that could result in improved dietary behaviour and thereby improved health status (Chapman et al., 1995; Neumark-Sztainer and Palti, 1995; Harnack, Block and Lane, 1997). Therefore, the respondents' environment, including lifestyle, living arrangements and age, are vital for this purpose. In this study youth knowledge on nutrition and eating habits was investigated with a view to analyse factors related to availability of nutritious food, care for youth, social and health services, environment and sensitization on nutrition. It is assumed that these variables if well understood would contribute to enhanced nutrition knowledge and eating habits.

2.2 Nutrition and Nutrition Knowledge

Gropper, *et al*, (2016) defined nutrition as the process of getting food into your body and using it as raw materials for growth, fuel for energy, and vitamins and minerals that keep your body healthy and functioning properly. Therefore, good nutrition means a healthy diet. It gives your body the right amount of energy, enough raw materials and all of the "little helpers" you need to stay healthy (Gropper, *et al*, 2016). Good nutrition will also provide photochemical and antioxidants that will help keep you feeling young, looking great, and perhaps even disease-free (Gropper, *et al*, 2016).

Nutrition knowledge can range from an understanding of the chemical structure of nutrients to knowledge of low-fat cooking methods (Smolin and Grosvenor, 2013). Rogers (1983) identified three types of knowledge about nutrition: (i) awareness (e.g., diet-disease relationships); (ii) knowledge of principles (e.g., cholesterol is found in animal foods only, lemons are a good source of Vitamin C, high intakes of fruits and vegetables can prevent hypertension, milk contains psychotropic peptides, etc.); and (iii) how to knowledge (e.g., how to select foods with less fat or how to read a food label accurately). Nutritional knowledge impacts attitude and eating habits among the society (Rosebloom, Jonnalagadda and Skinner 2002). The nutritional knowledge can be obtained from many sources including magazines, internet, and others sources.

2.3 Eating habits

Rossi and colleagues (2008) defined habit as an act, use and custom or standardized reaction that originates from the frequent repetition of an activity (learning). Therefore, the foods or kind of foods that people habitually and repeatedly eat every day characterize their eating habits or behaviours (Rossi et al, 2008). They explained that the repeated ingestion of food alone does not form eating behaviour so there must be a series of interrelated factors, internal or external to the organism, which influences the formation of such a habit. It is important to say that eating habits are not necessarily synonymous with food preferences, that is, when people eat the foods they like best (Wardle *et al*, 2001).

Eating habits or behaviours cover a multiplicity of distinct behaviours from 'simple'

chewing of food to food shopping, food preparation, etiquette, and food policy decision-making (Wardle *et al*, 2001). He argued that eating habit can be general (e.g. doing the weekly grocery shopping) or quite specific (e.g. choosing brand A over brand B according to their saturated fat contents). Much knowledge is required for these behaviours, only a little of which is related to nutrition (Wardle *et al*, 2001).

However, in the specific case of preschool children, eating habits are basically characterized by their food preferences (Wardle *et al*, 2001). Children in this age group end up eating just the foods they like, or which are available in their environment.

Wardle and colleagues (2001) discovered that among the interrelated factors present in the formation of eating behaviour, the psychosocial factors stand out. They are responsible for the conveyance of food culture and they influence food experience from childbirth, allowing the opportunity for initial learning about the sensation of hunger and satiation and also perception of different tastes. Furthermore, they revealed that adequate introduction of new foods during the first year of life, and from this point on, by means of proper food socialization, and availability of a varied number of healthy foods in a pleasant environment, allow children to develop food preferences that will determine their pattern of consumption (Wardle *et al*, 2001).

For example, preschool children tend to have preferences that include foods with high concentration of carbohydrates, sugar, fat and salt, and low intake of foods such as vegetables and fruits if compared to the recommended amounts (Mennella *et al*, 2008). This tendency originates from children's food socialization and greatly depends on the patterns of the food culture to which they belong (Rossi, *et al*, 2008).

The cultural aspects may be summarized into the word "culinary", which refers to specific dishes and how these are prepared, involving ingredients, characteristic tastes and preparation (Rossi *et al*, 2008). Rossi and colleagues (2008) said that culinary is concerned with the combination of foods or their processing at domestic and industrial level, adapting them in order to keep their nutritional value, and thus meeting people's biological and metabolic requirements (Rossi *et al*, 2008). The selection of foods used in culinary varies according to different social classes, and is determined by rules with cultural and economic specificities of their own, represented in different ways (Rossi *et al*, 2008). The psychological reasons for accepting or rejecting foods are included in these rules (Rossi *et al*, 2008). Foods are categorized through sensorial suggestions (good taste, bad taste, or tasteless), consequences of eating certain foods (good, harmful), ideational factors (use of the food, adequate or inadequate, appearance, hygiene), which influence the selection of foods (Wardle *et al*, 2001).

2.3.1 Nutritional Learning Processes

Psychology has initially showed that internal suggestion of hunger and satiation was responsible for nutrition (Viana, *et al*, 2008). At the same time, the homeostatic model, defined as internal physiological balance necessary for body maintenance appeared. In this model, eating is an unlearned response to hunger suggestion. However, this same model allows affirming that food intake can be learned. Nutritional learning has presented some methods, based on the paradigm of conditioning, for expanding food preferences. These methods are: learning from repeated exposure and exposure, conditioned flavour/flavour preferences, and conditioned nutrient-flavour preferences.

2.3.2 Learning from Repeated Exposure or Exposure

Acquaintance with food is the first step for children to learn about the taste of foods (Laessle *et al*, 2001). Laessle and colleagues (2001) discovered that repeated exposure and/or exposure are the processes of acquaintance with foods, which begin at weaning and with the introduction of solid foods during the first year of life. They learned that during these processes children are gradually introduced to family food and parents have the duty of offering them a diversified diet so that they learn about different flavours, thus developing and testing their sense of taste.

Although the sensorial qualities of breast milk allow children to have their first contact with different flavours and smells, helping them to accept new foods during the weaning period, it is the learning through repeated exposure that provides the familiarity necessary for children to set up a pattern of food acceptance (Laessle *et al*, 2001).

In their study, Lazarou *et al.,* (2008), when testing preschool children on the extension of repeated exposure to new foods/flavours, results showed that food cannot just be perceived visually or through the sense of smell; children need to taste the food, even in a small amount, so that conditioning is produced and food acceptance is enhanced. They learned that the acceptance of new foods occurs only after 12 to 15 presentations of food and sometimes parents could get discouraged, thinking their children do not like the food, and give up.

2.3.3 Conditioned Flavour/Flavour Preferences

Studies with animals and humans have shown that by associating sugar or favourite flavour with an unknown or least preferred flavour, acceptance of the least preferred flavour is enhanced (Lazarou *et al*, 2008). Perception of flavours involves the sensation of sweet, salty, sour and bitter and some others associated with amino acids (Lazarou *et al*, 2008). Sensitivity to sweet flavour is already present in the prenatal period, and is therefore an innate preference (Lazarou *et al*, 2008).

Possibly, due to this sensitivity to sweet flavour stimulated by the chemical substances found in amniotic fluid during the prenatal period, there is an increased acceptance of unknown foods when these are associated with sugar or with naturally sweetened foods (Lazarou *et al*, 2008). In this kind of learning experience, flavour is associated to pleasure and, probably because of this, it is maintained with time, that is, it is long-lasting and can only be changed through another learning experience that replaces or neutralizes the previous one (Lazarou *et al*, 2008).

2.3.4 Conditioned Nutrient/Flavour Preferences

Similarly, Lazarou and colleagues (2008), discovered that conditioned nutrient/flavour or calorie/flavour preferences occurs in a way that is very similar to that of flavour/flavour experience *i.e.*, a nutritious substance with more calories causes a physiological feeling of satiation, which, associated with flavour, enhances the acceptance of unknown foods (Lazarou *et al*, 2008). As there is a delay between the sensorial suggestion perceived and the nutritional consequence, foods that have more calories are more easily accepted due to the increased feeling of satiation that occurs

right after ingestion (Lazarou *et al*, 2008). In addition, foods with high fat content, which have more calories, usually are in the group of foods that are more frequently ingested and, consequently, more widely known ingestion (Lazarou *et al*, 2008). Foods with high fat content are also more palatable, since many volatile substances, which add flavour to foods, are fat-soluble ingestion (Lazarou *et al*, 2008).

Furthermore, fat, as an ingredient for food preparation, adds a creamy and fluffy texture to foods, and probably catches children's preference ingestion (Lazarou *et al*, 2008). Possibly because of physiological feelings of satiation and also flavour, the nutrient/flavour experience will develop a preference for calorie-rich foods ingestion (Lazarou *et al*, 2008).

2.4 Social Context in Nutrition

Some studies show the importance of social context in nutrition, as food experience influences eating behaviour, infant socio-emotional development, and quality of parent child relationship (Ramos and Stein, 2002). The main focus of interaction between parents and children during the first years of life is usually nutrition, which begins with breast-feeding (Ramos and Stein, 2002). During breast-feeding, the reflection of facial expression is interpreted by parents as response to flavour preference or dislike, which allows a form of communication during the breast-feeding period (Laessle *et al*, 2001).

This period offers the opportunity for reciprocal learning about mother-child interaction, not only in terms of eating behaviour, but also other kinds of behaviour presented by infants (Laessle *et al*, 2001). In the second semester of life, with accelerated growth and

development, infants need other foods besides breast milk in order to meet their biological needs (Ramos *et al*, 2002). The introduction of other foods changes their eating and infants have to learn about new flavours (Laessle *et al*, 2001). This period is characterized by quick changes that end up causing most parents to feel anxious and stressed (Laessle *et al*, 2001).

2.4.1 Attitudes and Strategies in Nutritional Context

Family mealtime is the social context in which infants have the opportunity for eating together with their brothers and sisters, friends and adults that are role-models to them, and who are attentive to their eating behaviour, complimenting, encouraging or calling their attention at the table (Ramos *et al*, 2002). Some evidences suggest that poorly palatable foods such as vegetables are offered in a negative context, usually involving coercion of infants into eating them (Ramos and Stein, 2002). On the other hand, foods that are rich in sugar, fat and salt are offered in a positive context, enhancing the preference for these foods (Ramos and Stein, 2002). Usually, these foods are offered at parties or celebrations or as a reward if infants eat up their meal, in a positive interaction, making them a preference.

Positive interaction may give rise to negative interactions, in which parents make use of coercive strategies (Laessle *et al*, 2001). As infants are forced into eating a certain kind of food, which parents believe to do them good, they reduce their preference for this food or flavour (Laessle *et al*, 2001). External control is usually exerted in order that infants start to have a diversified diet and increased food intake, or to prevent infants from eating foods parents find inadequate (Schwartz *et al*, 2011).

However, what infants learn from these interactions is not what parents had in mind (Schwartz *et al*, 2011). In these situations, infants learn to dislike the foods they are forced into eating, even if these are offered as a reward, which results in a contrary response (Ramos and Stein, 2002). As a result, they may start to hate that kind of food (Ramos and Stein, 2002).

Moreover, interventions using nutrition knowledge to change habits, a study of Michigan middle-school student on their nutrition knowledge and eating behaviours consisted of three assessments: eating habits, nutritional knowledge and healthy eating. Each assessment was given pre-and post –experiment (Fahlman et al, 2008). The participants 407 students were put into an intervention group. The control group did not receive any formal nutrition teaching. Results found that, the intervention group increased their nutrition knowledge as well as more likely to eat fruits and vegetables and less likely to eat junk foods than their control counter parts. The authors believed that the declining eating behaviours of children and adolescents deteriorated over the past twenty years and those children's eating behaviours are directly linked to adult eating patterns.

Reward and coercion are strategies normally used by parents as a way of instrumental nutrition (Ramos and Stein, 2002). This instrumental characteristic of nutrition, as for example, "eat up your vegetables and they you can eat dessert", is a strategy that can systematically influence the development of food preferences and children's eating behaviour itself (Ramos and Stein, 2002). The use of reinforcement strategies by means of instrumental nutrition produces an immediate effect, although on the short run

(Ramos and Stein, 2002). However, on the long run, it produces a negative action on the preference of food intake. In these circumstances, the use of food as reward and a way to increase the intake of poorly palatable foods mixes up the functions of nutrition, thus contradicting the establishment of nutritional eating habits for children (Ramos and Stein, 2002). These strategies end up causing adverse effects on the preference for some foods (Ramos and Stein, 2002).

2.4.2 Development of Hunger and Satisfaction Perception

The eating strategies used by parents can also change children's internal control over hunger and satiation. There is some evidence 9,17,28 that the external control exerted by parents does not allow children to learn about hunger and satiation signs, affecting their own control over food intake, and resulting in weight problems. Children can learn how to distinguish between signs of hunger and other feelings; however, if parents offer them food when they are not hungry, they will probably have an inadequate diet.

For example, when children say they do not want to eat on because they are satiated, and parents say "finish up your food", it is clear to children that their internal feeling of satiation is not relevant to the amount of food they need to ingest. Parents who externally influence their children's eating behaviour may prevent the development of their adequate self-control. As a result, children may become dependent on external suggestion to start, proceed with and finish their meal.

Ramos *et al,* (2002), concluded that children from their eating habits through a learning process associated with flavour conditioning, physiological response and social context.

Besides, parents' strategies at mealtime contribute to children's acquisition of food preferences and internal control over hunger and satiation and they are usually concerned with the amount of food their children eat and not with the development of more adequate habits and attitudes related to dietary quality

Moreover, Ramos *et al*, (2002), recommend that parents should be well-informed on what a healthy diet for children consists of, and on what food preference conditioning methods are available, in order to diversify food options, thus reducing children's food neophobia. Besides, they advised parents to allow their children to learn about internal suggestion of hunger and satiation, develop their food intake self-control and minimize overweight problems.

2.5 Empirical Literature Review

There are several studies which are directly related to the present study. One of them was a case study titled "Nutrition knowledge, attitude and practices among urban primary school children in Nairobi City, Kenya", which was conducted by Macharia-Mutie and Ndungu (2015). Apart from investigating the nutrition knowledge, attitudes and dietary practices of school children in four selected primary schools in Nairobi City, Macharia-Mutie and Ndungu (2015) also assessed health status of those students including body composition, blood pressure and physical activities levels. They found that children had moderate nutrition knowledge and poor dietary practices

Another study was carried out by Britta Thielemann (2012) to investigate if there is a relationship between nutritional knowledge and eating habits of school children.

Besides, Thielemann (2012) wanted to establish the impact of lack of proper nutrition information on weight gain and obesity of college students. The results indicated a positive relationship between the knowledge of nutrition and eating behaviour and the weight of college students.

Additionally, dietary habits of male students were positively correlated with parents' education levels, household income and nutrition attitude; dietary habits of female students were positively correlated with household income, nutrition knowledge and nutrition attitude; and dietary habits of female students were positively correlated with obesity index (OI). It was recommended that a proper nutrition education program and intervention should be designed and implemented to improve elementary school children's nutrition knowledge and nutrition attitude; and dietary habits.

A qualitative study on nutritional knowledge of primary-school children and mothers in Tehran was conducted by Abdollahi et al, (2008). In their study they evaluated the nutritional education demands of primary-school children in Tehran. They used focus group discussions to investigate the information about the knowledge and advantages of different food groups, including foods which help in digestion system, growth and in increasing intelligence.

They found that students obtain the nutrition knowledge from their parents, television, books, teachers and friends. On the other hand, mothers of these students thought that their children obtain information through television advertisements, parents and classmates. When asked about the source of information they prefer, most of the children

preferred to learn about nutrition from their parents and television, especially children's programmes and advertisements.

The study titled "Nutrition knowledge, attitude and habits of Taiwanese elementary school children", which was conducted by Lin et al. (2007 in Taipei, Taiwan to investigate the nutrition knowledge, attitude and behaviour of school children in Taiwanese elementary schools. Additionally, they wanted to know the relationship of various components of the study. The results indicated that children's knowledge was fair in nutrition basics but poor in the physiological function of nutrients and relationships between diet/nutrients and disease and 'the daily serving requirement for different food groups.

In general, it means children valued the importance of nutrition but they did not care about the health benefits of foods in food they selected. The research was satisfied by the quality of the diets because they did not meet the recommended serving requirements for milk, vegetables, fruits, cereals and grains. Positive relationships were found among nutrition knowledge, attitude, nutrition behaviour and dietary quality score.

The restraint or dis-inhibited eating behaviour of 4^{th} to 6^{th} graders were not serious but a large number of children already performed some self-controlling practices to avoid obesity, however, not frequently. One fourth of the students skipped meals, especially breakfast, and one quarter of 4^{th} to 6^{th} graders prepared their own breakfasts which may have some impact on children's diet quality. A gap was found between nutrition knowledge, attitude and eating behaviour, especially vegetables and fruits consumption,

indicating that they did not have good attitude towards eating healthier foods. Researchers recommended the nutrition education program to be designed and implemented and it should not only include food serving requirements for a particular group but it should also apply appropriate theories to improve the motivation for healthy eating.

In 2004, Rachel Brown and Jane Ogden carried out a study on "Children's Eating Attitudes and Habits: A Study of the Modelling and the Control Theories of Parental Influence". This study compared the modelling and control theories of parental influence on children's eating attitudes and behaviour with a focus on snack foods. The results showed significant correlations between parent and child for reported snack intake, eating motivations and body dissatisfaction, indicating an important role for modelling. Parents were then divided according to their control scores. Children whose parents indicated greater attempts to control their child's diets reported higher intakes of both healthy and unhealthy snack foods. In addition, those children whose parents indicated a greater use of food as a means to control their child's behaviour reported higher levels of body dissatisfaction.

The results provide some support for both the modelling and control theories of parental influence. However, whereas modelling appears to have a consistent impact, parental control has a differential impact depending upon whether this control is focused on the child's diet or on other aspects of their behaviour. The researcher recommended the design of a positive parental role model as the best method for improving a child's diets than attempts to control their diets.

Niciforovic-Surkovic *et al.,* (2002) conducted a study to assess if nutrition knowledge and eating habits of school children are related to nutrition knowledge and eating habits of their parents in Vojvodina, Northern Serbia in Yugoslavia. Additionally, they wanted to nutrition knowledge and eating habits of school children are related to age and other demographic characteristics. Findings showed that nutrition knowledge of school children was quite good and it was directly related to the age of respondents; it increases as the age increases. The results were different regarding eating habits; school children had enough knowledge about what foods were healthier but they did not consume consumed unhealthy foods.

2.6 Research Gap

The study observed that, school children valued the importance of nutrition but did not concern the health benefit of foods in food selection. Their dietary quality was not satisfactory and the diet of most children did not meet the recommended serving requirement especially fruits and vegetables consumption.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

The chapter, explains the meaning of the terms used in research methodology and how it was performed, which includes: research design, research area, study population, sampling procedure and sample size, ways used to collect data, four method used to collect the data, how the data analyzed, how the process performed on maintaining ethical consideration and the study limitation well observed.

3.1 Research Design

Research design is a comprehensive plan for data collection in which a researcher uses in order to answer specific research questions (Bhattacherjee, 2012). The plan sets conditions for collecting and analysing data in a manner that aims at combining relevance to the research purpose with economy in procedure (Kothari, 2004). In this study, the processes of collecting and analysing data employed both primary and secondary sources of data. Primary data was collected from the field in schools and University of Dar es Salaam from Ubungo ward.

3.2 Research Area

Research area was Kinondoni Municipal. The rationale for selecting the area was due to the fact that, the area had a good representation of educational institutions. It has primary, secondary schools, colleges and Universities. This comprehensive mixture provided a good sample for this research. Besides, the ward has mixed levels of household welfare ranging from low, medium and high income which complements

the sample characteristics in education and economic status. The education levels that ranged from primary to university also contributed to gather a representative sample as far as nutrition knowledge is concern.

3.2.1 Geographical Location

Ubungo is a one of thirty four (34) wards in the Kinondoni district of Dar es Salaam. It is located in the western part of the district. According to the 2012 National Population Census, Ubungo has 56,015 people, female being 28,794 and male 27,221 (URT, 2013)

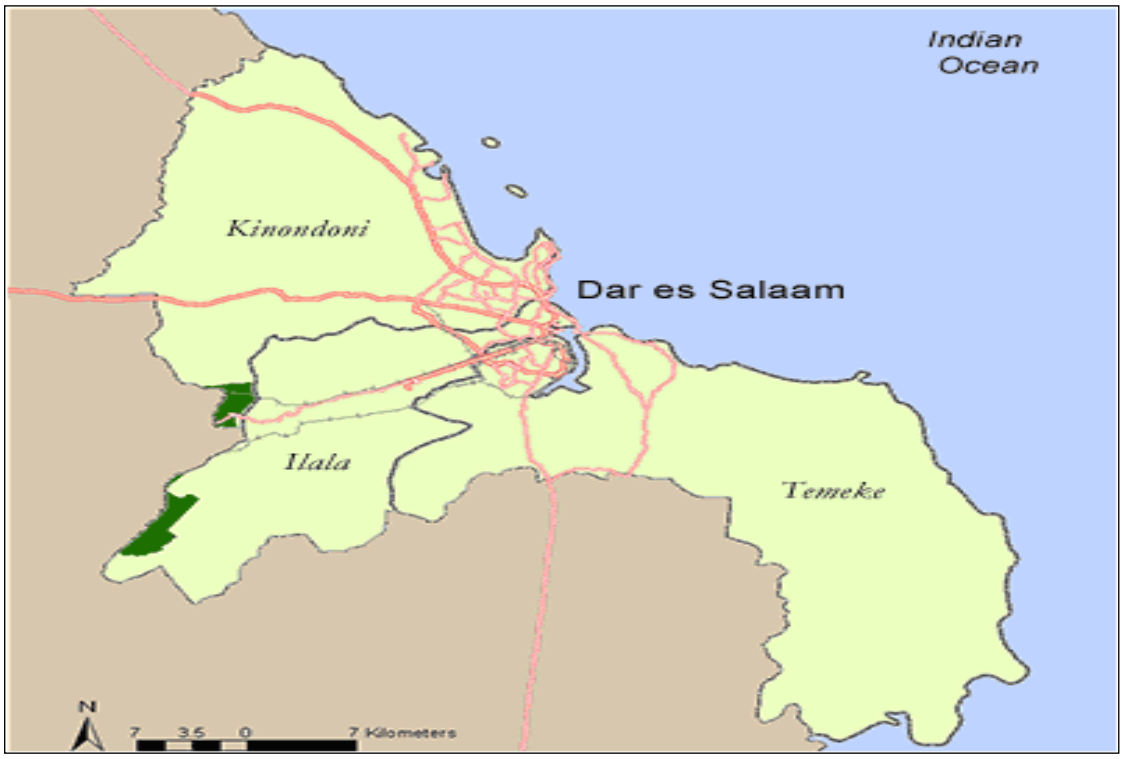


Plate 3.1: Map of Dar es Salaam City showing its three Districts

(Source: KMC)

Ubungo is among of the wards in the Kinondoni district of Dar es Salaam, Tanzania. It is located in the western part of the district and is much known throughout

Tanzania as one of the central hubs of transportation because of its massive bus terminal. (https://en.wikipedia.org/wiki/Ubungo- 09/08/2016, 1.11.00pm)

The study was conducted in Dar es Salaam region (Figures 3.1 and 3.2) at Mlimani Primary School, Mapambano Primary School, Mugabe Primary School, Alpha High School and at the University of Dar es Salaam within Kinondoni Municipality. As the ward has all levels of educational institutes what the study was looking for.

Plate 3.2 Map showing Wards in Kinondoni Municipal

Source: Google earth

3.3 Study Population

Population refers to all members, group or elements where the research information is collected (Kothari, 1990). In this case, the research population included students aged between 14 and 24 years, teachers, cooks and savers in four educational institutions within the Ubungo Ward in Kinondoni Municipality, Dar es Salaam City.

3.4 Sampling Procedure and Sample Size

Kothari (2004) defines Sampling Procedure as the technique to be used in selecting the items for the sample. The sample was chosen from the population of the study by both purposeful and simple random sampling. Purposeful sampling was used to select pupils from schools and students from Universities and colleges. Selection of primary and secondary schools was discussed by the Kinondoni municipality for baseline information and permission of conducting research. Thereafter, a random sampling was applied to select respondents from these five institutions. The main criteria were availability, readiness and age limit of students. While at primary and secondary schools the selection was discussed with teachers, at the University and colleges the researcher met the respondents directly and randomly.

Moreover, the study judged the number of sample size to be an average of one hundred (100) respondents as an optimum number. This is a large size enough to provide confidence results. The sample size was determined by homogeneous nature of the population and by the random sampling technique (Kothari, 2004). Eventually, the sample size reached 138 respondents.

3.4.1 Sample Characteristics

The sample was characterized by ages of respondents from ranging from mid child age (fourteen years) to mature students ranging from eighteen to twenty four years. Likewise, the sample is a mixture of students from Primary, Secondary and University. Besides, it is characterized by different levels of income from low, middle and high incomes. In addition, socially and as far as education is concern

respondents came from average and high educated households and areas such Mapambano, Mugabe and Mlimani Primary Schools respectively.

3.5 Data Collection Methods

The researcher used four methods of data collection, the questionnaire, focus group discussion, interview and observation. Likewise, observation method was employed in some occasions especially during lunch time at the University restaurants.

3.5.1 Questionnaires

Two types of questionnaires were designed, *i.e.*, the close ended questionnaires and open ended questionnaires. The close ended questionnaire requires consistence in order to make comparisons whereas open ended questionnaire allow respondents to use their own words and perspectives as well as provide subjective detailed information. The questionnaires were designed in two languages, English and Swahili. During data collection, respondents were left to fill in the questionnaires but in some occasions especially in primary school respondents questionnaires were administered in order to improve effective understanding of the question and correct filling in.

3.5.2 Focus Group Discussions

This was administered to the youth. The group involved 4-6 respondents at a time. The advantage of this technique is that it can serve time as respondents responded in groups. This approached was applied mainly to secondary and university respondents. Open but harmonized discussion was conducted. The smaller groups elected a member to coordinate the discussion while the research was taking notes. Five Focus Groups were

formed during different days. Two groups were from Alpha High School and three from University of Dar Es Salaam.

3.5.3 Interview

This was informal, conversational interview because there were no predetermined questions asked. The researcher mainly interviewed the cooks, vendors and attendants at the canteens and some students who were available at the canteens.

3.5.4 Observation

In this process, the researcher simply sat somewhere near the canteens and kitchens to observe and record systematically the habits of students, cooks, attendants, vendors and other people regarding foods selection, cleanliness of the environment, equipment used and themselves, without being noticed by respondents through checklist.

3.6 Data Analysis

According to Hatch (2002) data analysis is a systematic search for meaning from the collected data. In this study, data was analysed by using SPSS 16.0 Software through which data and information collected were coded, transcribed, analysed and interpreted, then tables and charts showing frequencies and percentages were developed to describe responses.

3.7 Ethical Considerations

According to Blumberg; Cooper and Schindle (2008) defined ethics as moral principles, norms or standard of behavior that guide moral choices about our

behavior and our relationship with others, this is supported by Saunders, Lewis and Thornhill (2007) who contends that, research ethics base on how researcher prepare and organize his /her research design in all stage of research procedure. Particularly in this study researcher makes explanations in brief to the respondents about nature of study and importance of study. Also researcher assures respondents, their confidentiality, anonymity on any information provided. However, as research autonomy I was required to have permission to conduct the research from relevant authorities.

The study was initiated by a letter from the Open University of Tanzania requesting permission to conduct research in three primary schools and one secondary school in the Ubungo Ward, which was sent to the Kinondoni Municipality. After permission was granted, respondents were informed. Respondents were not forced to participate and to maintain confidentiality, names of respondents were not provided. Many answers were taken as qualitative.

CHAPTER FOUR

4.0 PRESENTATION OF FINDINGS AND DATA ANALYSIS

This chapter presents the findings of the study. It includes the characteristics of respondents in terms of age, gender and level of education. The chapter also explains the knowledge of respondents about nutrition, enjoyment of the meal and eating practices. This chapter further discusses the importance of the balance diets, nutritious foods and eating patterns and their impact on academic performance. Lastly, it gives the knowledge of respondents about main types and groups of foods.

4.1 Sample Characteristics

4.1.1 Age Distribution of Respondents

One hundred and thirty eight (138) students participated in this study with a response rate of 100% as shown in Table 4.1. The majority was 47.1% (65 students) who aged between 10 and 14 years and most of them were primary school students. The remaining, 26.1% (36) aged between 15 and 19 years and 26.8% (37) aged between 20 and 24 years. The aged distribution implies that though the majority of respondents aged between 10 and 14 years but was well knowledgeable about nutrition and was capable of giving information.

Table 4.1: Age Distribution of the Respondents

Years	Frequency	Percent
10-14	65	47.1
15-19	36	26.1
20-24	37	26.8
Total	**138**	**100**

Source: Field Data 2015

4.1.2 Gender of the Respondents

The gender of respondents was assessed to establish the influence of gender on the perception of nutrition and selection of foods among youths. A total of 138 respondents participated in the study of which 82 (59.4%) were male (Figure 2) indicating that males were quick at responding than females.

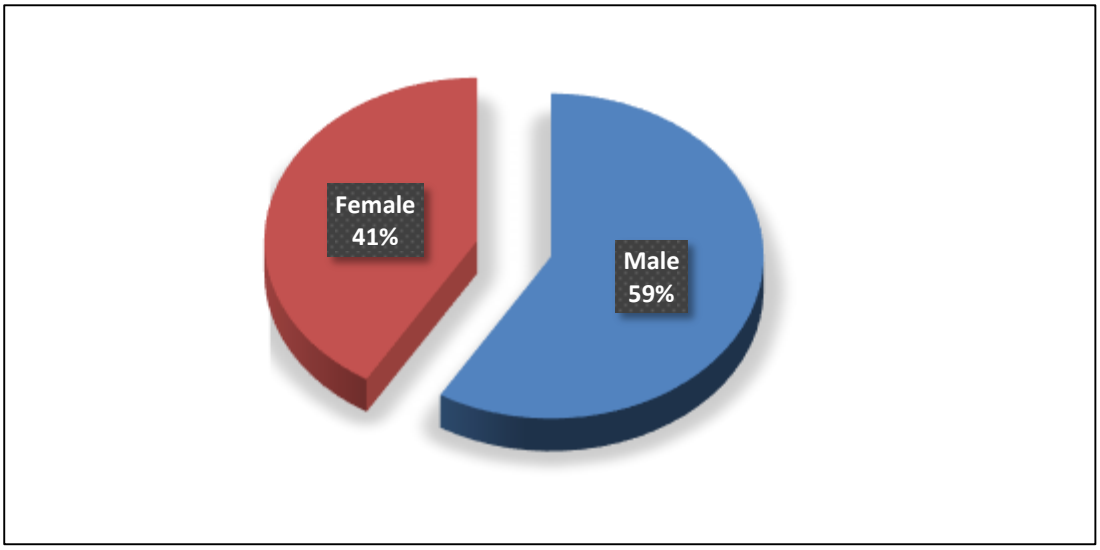


Figure 4.2: Gender of Respondents (Field Data, 2015}

There were a total of 20 respondents from Mugabe Primary School, 26 respondents from Mapambano Primary School, 28 respondents from Mlimani Primary school, 33 respondents from Alpha High School and 31 respondents from University of Dar es Salaam (Table 4.2)

At Mugabe Primary school, 75% were male while in Mapambano Primary school 53.8% were male (Table 4.2). At Mlimani Primary school and Alpha High School the ratio of respondents between male and female were almost 1:1. However, other youth from different colleges and from the University, majority of respondents were male (Table 4.2).

Table 4.2: Cross Tabulation Of The Respondents In Different Schools

			Sex		Total
			Male	**Female**	
School Names	Mugabe	Count	**15**	**5**	**20**
		% within Mugabe	75.0%	25.0%	100.0%
		% within sex	18.3%	8.9%	14.5%
		% of Total	10.9%	3.6%	14.5%
	Mapambano	Count	**14**	**12**	**26**
		% within Mapambano	53.8%	46.2%	100.0%
		% within sex	17.1%	21.4%	18.8%
		% of Total	10.1%	8.7%	18.8%
	Mlimani	Count	**14**	**14**	**28**
		% within Mlimani	50.0%	50.0%	100.0%
		% within sex	17.1%	25.0%	20.3%
		% of Total	10.1%	10.1%	20.3%
	Alpha High School	Count	**16**	**17**	**33**
		% within Alpha High School	48.5%	51.5%	100.0%
		% within sex	19.5%	30.4%	23.9%
		% of Total	11.6%	12.3%	23.9%
	Youth from The University and other colleges	Count	**23**	**8**	**31**
		% within University and colleges	74.2%	25.8%	100.0%
		% within sex	28.0%	14.3%	22.5%
		% of Total	16.7%	5.8%	22.5%
Total		Count	**82**	**56**	**138**
		% within Schools	59.4%	40.6%	100.0%
		% within sex	100.0%	100.0%	100.0%
		% of Total	**59.4%**	**40.6%**	**100.0%**

4.1.3 Level of Education

Figure 4.2 shows the results regarding the level of education of respondents. It shows that 50% of respondents have primary education, the researcher allowed to visit three primary schools and one secondary school, while universities and colleges were on holidays, those responded were captured at the work place of the researcher. 21.7% have secondary education and 28.3% have undergraduate degree. This implies that the respondents were educated so they have knowledge about nutrition and can provide the

required information. Plate 4.1 shows primary school respondents who constituted 50% of respondents as evidenced in Figure 4.3.

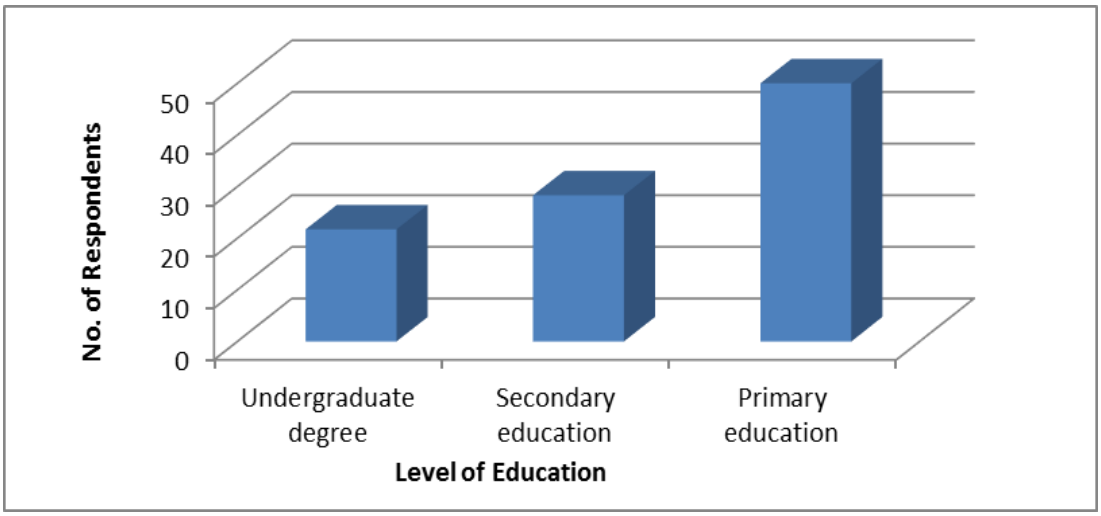


Figure 4.3: Level of Education of Respondents (Field Data, 2015)

4.2 Knowledge about Nutrition

Figure 4.3 shows that 13.8% of respondents were very knowledgeable about nutrition, 34.1% were knowledgeable, 23% were somewhat knowledgeable and 28% were not knowledgeable. This indicates that a large number of respondents (72%) were knowledgeable about nutrition.

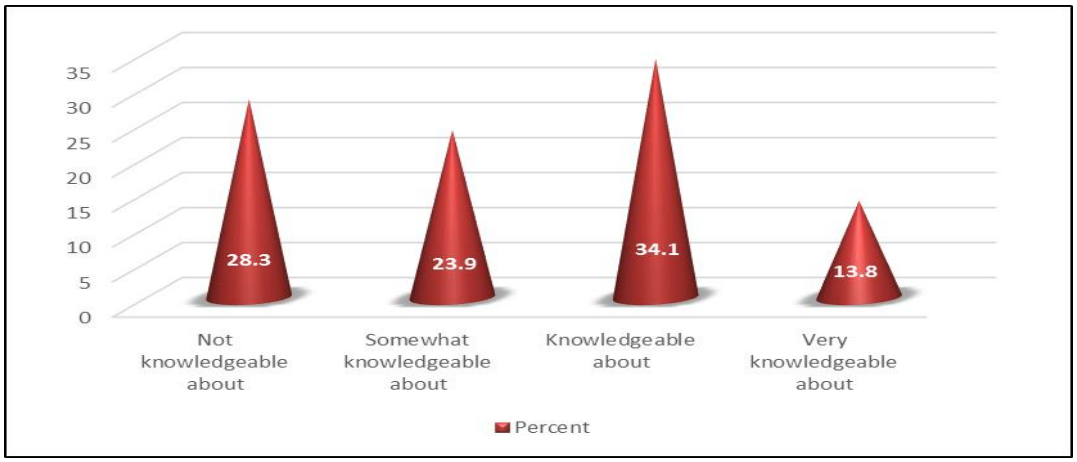


Figure 4.1: Respondents' Knowledge about Nutrition (Field Data, 2015)

4.3 Enjoyment of Meal

Figure 4.4 shows the results of the question whether respondents enjoy their meals. It shows that 47.8% (66) and 39.1% (54) always and/or often enjoy their meals while the remaining 7.2 (10) sometimes enjoy their meals, 2.9% (4) rarely enjoy their meals and 2.9% (4) never enjoy their meals. This implies that majority of respondents enjoy their meals, so they might get enough nutrients for their health.

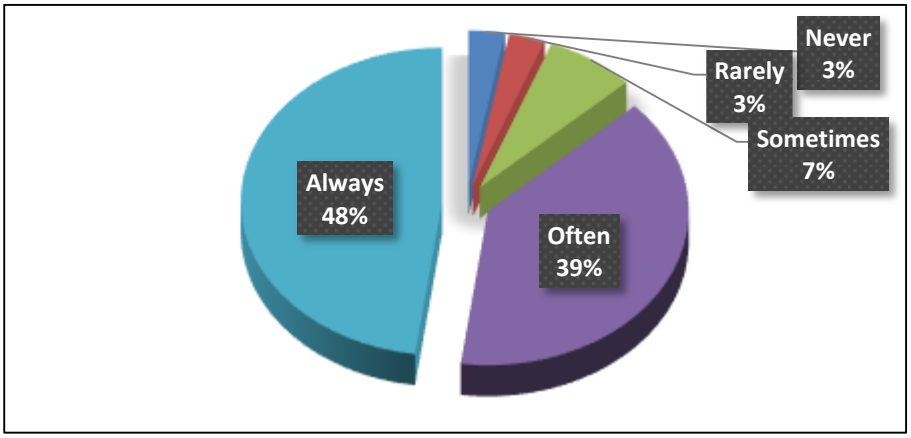


Figure 4.2: Enjoyment of the Meals (Field Data, 2015)

4.4 Eating Speed

Figure 4.5 shows the results on the eating speed of youths. It was found out that 49.3% (68) eat accordingly and 36.2% (50) were eating slowly. The remaining 7.2% (10) eat fast, 3.6% (5) their eating speed is neutral and 3.6% (5) cannot determine their eating speed. This implies only few (10) can eat fast, especially the undergraduate youths, who sometimes are required to move from one area to another to attend lecture sessions and seminars. So the eating speeds of youths depend on the school's/college's time tables provided.

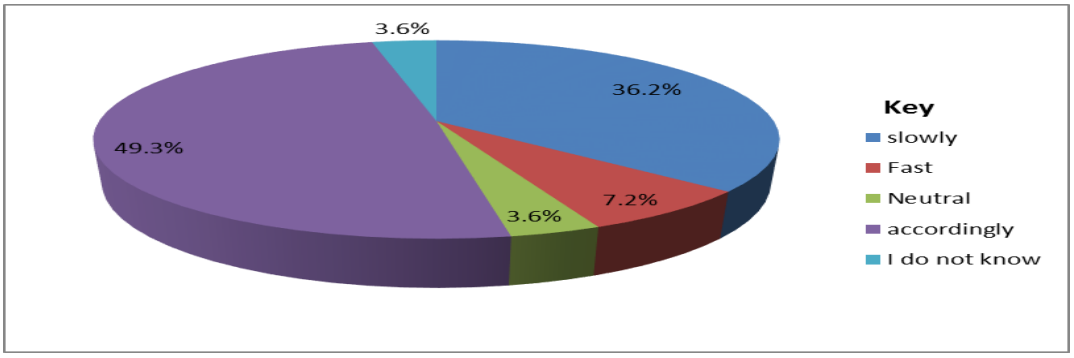


Figure 4.3: Eating Speed of Youths (Field Data, 2015)

4.5 Importance of Balanced Diet

The study assessed the importance of balanced diet to youths so should be taken regularly. Figure 4.6 shows the results that 62.3% (86) were neutral, so they do not know if balance diet is important to youths and should be taken regularly, 32 (23.2%) strongly agreed that balance diet is important to youths and should be taken regularly and 7 (5.1%) agreed that balance diet is important to youths. Others 6 (4.3%) disagreed that balance diet is not important to youths and 7 (5.1%) strongly disagreed with the statement. These results indicated that majority of respondents were neutral *i.e.* they not sure whether balance diet is important to youths and that it should be taken regularly.

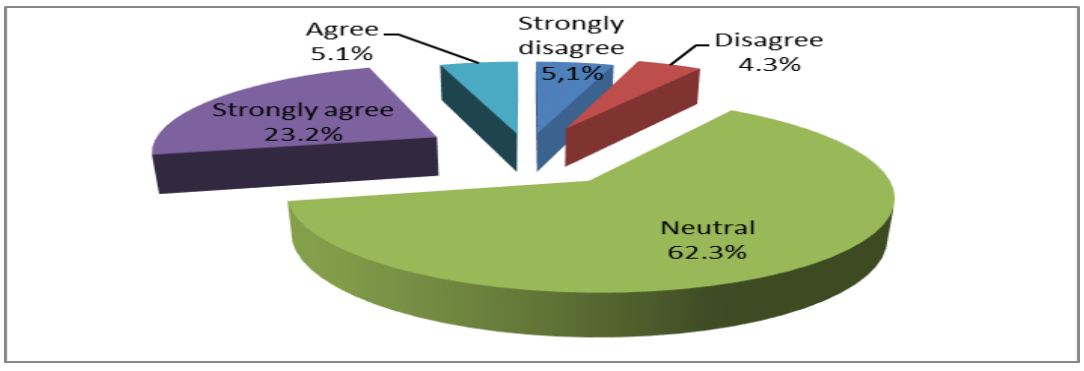


Figure 4.4: Importance of Balanced Diet (Field Data, 2015)

4.6 Eating Patterns

The study investigated the eating patterns of respondents so respondents were asked to indicate the number of meals they take per day. The results in Figure 4.7 show that 58.7% (81) eat twice per day, 29.7% (41) eat three meals per day, 10.1% (14) eat more than three meals per day and 1.4% (2) eats once per day. This indicates that majority of respondents eat twice per day.

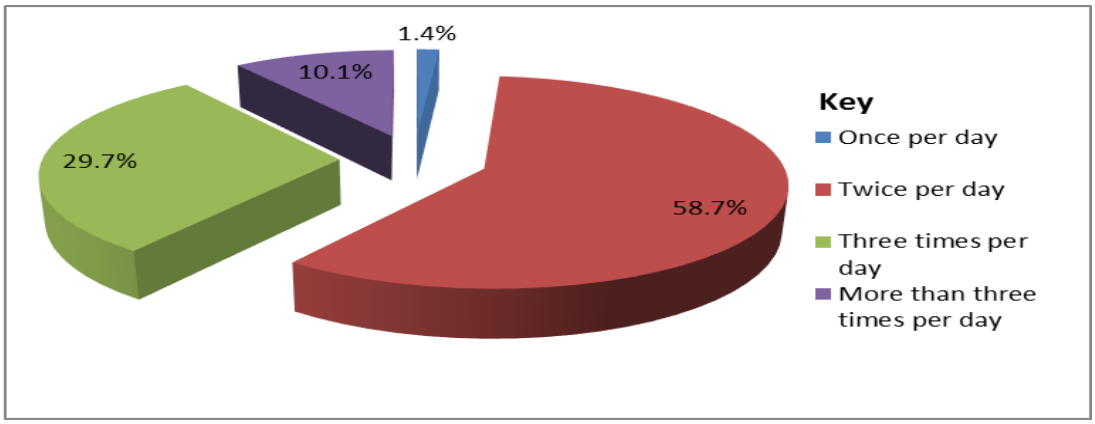


Figure 4.5: Eating Patterns of Respondents (Field Data, 2015)

4.7 Knowledge about Three Main Groups of Foods

The study assessed the knowledge of respondents about three main groups of foods which include protective foods, body building foods and energy providing foods. Respondents were asked if they have knowledge about these foods. The results in Figure 4.8 show that 53 (38.4%) had knowledge on energy providing foods. Others 45 (32.6%) had the knowledge on body building foods, 33 (23.9%) had knowledge on protective foods while very few 7 (5.1%) had the knowledge about all three groups of foods. This implies that efforts should be done to sensitize them about the three main groups of foods.

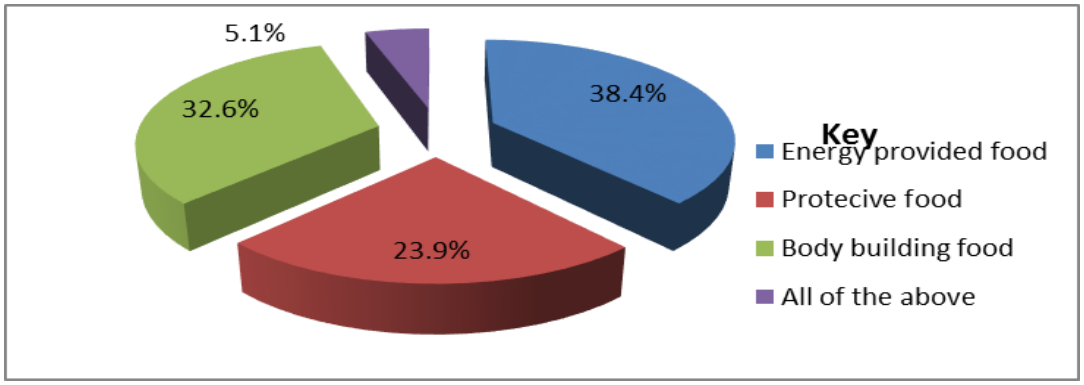


Figure 4.6: Food Groups (Field Data, 2015)

4.8 Types of Foods

The researcher wanted to know if the respondents know about different types of foods and health benefits they gain from eating those foods. The results in Figure 4.9 show that 46 (33.3%) understood that vitamins and minerals are healthier foods, 44 (31.9) know that proteins and water are healthier foods and 31 (22.5) understood that carbohydrates and fats are healthier foods. Others 15 (10.9%) knew that to be health the body need different types of foods including vitamins, minerals, proteins, water, carbohydrates and fats while 2 (1.4%) were not sure of which types foods are healthier than others. This implies that efforts should be done to sensitize them about the three main groups of foods as shown in Plate 4.2.

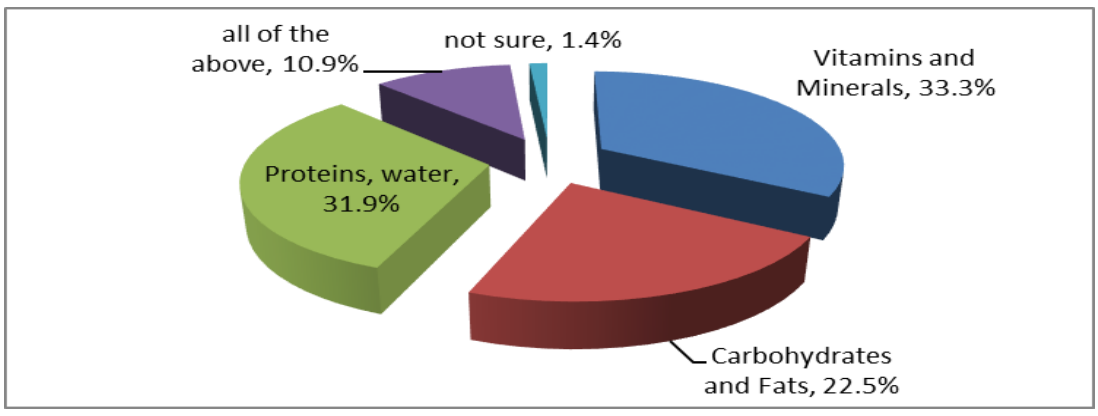


Figure 4.7: Different Types of Foods (Field Data, 2015)

Plate 4.2 is a poster which emphasizes the importance of eating balanced diets, i.e. to say "*to eat a balanced diet is for the better health"* also mentioned are the types of healthy foods which Tanzania is blessed with and can be eaten direct from the field; such as, fruits, vegetables, tomatoes which have vitamins and protective foods. All kind of fruits rich in vitamins' such as raw bananas offer such proteins while maize, bread, rice give energy and heat. Fish, beans and peas, meat, milk are body building foods and are rich in calcium especially milk and fish. More over the plate shows oil, honey, coconut and groundnut which gives energy to the body.

Plate 4.1: Different Types of Foods (Source: Tanzania Food and Nutrition Centre (TFNC))

Note: *"Remember to take a Balanced diet from mixed food which contained more than one type of food for healthy body and mind" (TFNC, 2013).*

The balanced diet which normally is comprise of natural raw foods as shown above include: oil, honey and sugar, grains, bread, roots raw (green) banana, legume, fish, milk, including; vegetables, and fruits. From all groups shown above, if the youth take at least one type from each group he/she will be assured of taking a balanced meal.

4.8.1 Vegetables and Fruits

A diet rich in vegetables and fruits has plentiful benefits. Among them it decreases the chances of having a heart attack or stroke; possibly protects against some types of cancers; lowers blood pressure; helps you avoid the painful intestinal ailment called diverticulitis; guards against cataract and macular degeneration, the major causes of vision loss among people over age 65; and adds to a variety to your diet and wake up your palate. On the Healthy Eating Pyramid, potatoes don't count as vegetables since they are chock full of rapidly digested starch, and they have the same effect on blood sugar as refined grains and sweets that is why potatoes are in the "use sparingly" tip (www.the nutrition.source.org).

4.8.2 Whole Grains

The body uses carbohydrates mainly for energy, and it can get them from many sources, some healthful (beans, vegetables, fruit, whole grains) and some not (sugary sodas and other drinks, sweets). The best grain sources of carbohydrates are whole grains such as oatmeal, whole wheat bread, and brown rice. They deliver the outer (bran) and inner

(germ) layers along with energy-rich starch. The body can't digest whole grains as quickly as it can be highly processed carbohydrates such as white flour. This keeps blood sugar and insulin levels from rising, then falling, too quickly. Better control of blood sugar and insulin can keep hunger at bay and prevent the development of Type 2 Diabetes and heart disease (www.the nutrition.source.org).

4.9.3 Nuts, seeds and beans

These plant foods are excellent sources of proteins, fibre's, vitamins, and minerals. Beans include black beans, navy beans, garbanzos, lentils, and other beans that are usually sold dried. Many kinds of nuts contain healthy fats, and packages of some varieties (walnuts, peanuts, hazelnuts, and pistachios) can carry a label saying they're good for your heart. Eating nuts and beans in place of red meat or processed meat can lower the risk of heart disease and diabetes (www.the nutrition.source.org). Thus, if the youths are advised to take whole grains, vegetables and nuts as elaborated above, they would be free from the diseases caused by poor dietary intake.

4.10 Importance of Nutritious Foods to the Youths

The researcher investigated also whether students have the knowledge about the importance of nutritious foods to their health and the impact they have on their academic performance. The results in Table 4.2 show that only few 12 (8.7%) were very knowledgeable about the importance of nutritious food and impact they have on their academic performance and 46 (33.3%) had the knowledge on the importance of nutritious food on their academic performance while 51 (37%) were neutral *i.e.* they did not know if nutritious foods have any impact on their academic performance. The

remaining 29 (21%) did not have the knowledge on the importance of nutritious food on their academic performance.

Table 4.3: Importance of Nutritious Foods to the Youths

Importance	**Frequency**	**Percent**
Not knowledgeable about it	29	21
Neutral	51	37
Knowledgeable about it	46	33.3
Very knowledgeable about it	12	8.7
Total	**138**	**100**

Source: Field, 2015

4.11 Source of Information about Nutrition

The study was very interested also to know the places where the youths get information about nutrition so the researcher can identify places which need modifications to raise youths' awareness on nutrition. The results in Table 4.3 show that the majority 110 (79.7%) obtain information about nutrition from their schools' or colleges' libraries while the remaining 19 (13.8%) and 9 (6.5%) obtain information about nutrition their parents and guardians; and health facilities, respectively.

Table 4.4: Source of Information about Nutrition

Source of information	**Frequency**	**Percent**
Schools/colleges	110	79.7
Parents/guardians	19	13.8
Health facilities	9	6.5
Total	**138**	**100**

Source: Field, 2015

4.12 The Consequences of Poor Nutrition

The researcher also was anxious to know youths' awareness about the consequences of poor nutrition. It was found out that 44 (31.9%) understood that if they fail to eat

nutritious foods their academic performance will be affected and 44 (31.9%) know that poor nutrition might lead to overweight or underweight. Others 30 (21.7%) understood that poor nutrition put their health in danger as they might be prone to infections and 20 (14.5%) are aware that if they fail to eat nutritious foods they might get diseases such as marasmus or kwashiorkor.

Table 4.5: Consequences of Poor Nutrition

Consequences	**Frequency**	**Percent**
Prone to infections	20	14.5
poor academic performance	44	31.9
overweight or underweight	44	31.9
Marasmus and kwashiorkor	30	21.7
Total	**138**	**100**

Source: Field Data, 2015

CHAPTER FIVE

5.0 DISCUSSION, CONCLUSION AND RECOMMENDATIONS

The chapter elaborated findings and the responses were given and analysed. Also the purpose of this chapter is to interpret and describe the significance of findings in light of what was already known about the research problem being investigated and explain any new understanding or insights about the problem after being taken the findings into consideration. It links and apparent correlations in the data.

*Thus the chapter will elaborate on: Age distribution, level of education and knowledge of the youth on the three main groups of food, eating styles of the youth, data found by cross tabulation, the importance of nutritious food for the youth and the consequences of malnutrition what students understand about it these will interpret how others stated about it in other studies links with the results provided by respondents, who were representing all youth within 14 – 24 years old.

5.1 Age Distribution of the Respondents

The study found that, respondents within 10 -14 years responded by 47.1% (65), shows that were high percentage comparing from those responded from secondary school or Universities /Colleges as were responded from three primary schools, Table 4.1: indicated. Respondents from secondary school (Alpha High School) was 26.1% (36), represented among of 400 pupils those agreed were free from studies were at the school brake hours. Youth from Universities and colleges there were on holidays thanks God

those who agreed were on their field work within the working area of the researcher, introduces to the study and agreed, responded by 26.8% (37).

Plate 5.1: Some of Respondents from University of Dar es Salaam with Researcher (Field Data, 2015)

5.2 Level of Education and Knowledge about Main Group of Food by Cross Tabulation

Results shows that primary school pupils who were very knowledgeable by 10.36% (14) as they have nutrition subjects in their curriculum, comparing with those responded from undergraduate, those who were very knowledgeable were 0.93% (3) while those from secondary school were 0.66% (2). Those who were not knowledgeable from undergraduate were 3.41% (11), those from secondary school were 2.97% (9) and from all primary school were 10.36% (14), done by cross tabulation results revealed that; from all three level of education those who were very knowledgeable out from all138 respondents were 33.12% (24) only, while those who are not knowledgeable were 53.82% (39), those who were somehow knowledgeable 45.54% (33) and who were knowledgeable 57.96% (42). Results shows that, more effort needed to educate the youth on the main three groups of food and its function

One study was done on college students by Caine Bish (2009), that study a college class used general nutrition guideline to promote fruits and vegetable consumption. During the study, researcher found that, among of the three primary schools, two of them are providing porridge for the pupils from standard one up to standard two through cost sharing, paid 200/- per one mug. Other pupils bought some snacks, peanuts, fried potatoes and cassava from vendors around the school/college observed

that they just take it randomly according what cash she/he has for a day but not healthy meal.

An individual to have healthy body and mind needs a balanced diet, plate 4.2; shows different types of food TFNC, 2013), one meal has to have one type of food from each three groups of food including drinking water. Also TFNC insisted that: *"Take a balanced diet from mixed food for healthy body and mind"*

Furthermore, Worsely, 2002; Sherman and Muehlhoff, 2007, reported in the report that; Nutrition knowledge did not significantly predict appropriate nutrition practices. Study have has shown that gains in knowledge and attitude do not always result in positive changes in practices and that nutrition knowledge is a necessary but not sufficient factor for changes in nutrition-related practices. While Shariff et al, (2008), argues that where as appropriates nutrition and health education can bring about the intention to change nutrition-related practices, positive attitudes towards nutrition, appropriate facilities and support is needed within the school environment and home to allow pupils to transform intention to change nutrition practices into actual practices.

The researcher, agreed with Shariff et al (2008), as observed during the study school environment, places where students took their meals, real need nutrition and health education to improve the situations, as most of the visited areas has problems on water supplies no running water all the times, thus school environment can contribute to poor practices on eating habits. Also some studies show the importance of social context in nutrition, as food experience influence eating behaviour, infant socio-emotional

development, and quality of parent child relationship. The main focus of interaction between parents and children during the first year of life is usually nutrition, which begins with breast-feeding (Ramos and Stein, 2002). Thus social issues also are very essential on nutrition and health education to the individuals, families and communities.

Table 5.1: Eating Styles of the Youth Presented by Cross tabulation Count

		Do you eat slowly or faster during the meal						Total
		Slowly	Fast	Sometimes	It depends	Not all of the above	They do not know	
Age	10-14	28	2	5	27	2	1	65
	15-19	19	3	0	13	1	0	36
	20-24	3	5	0	28	1	0	37
Total		**50**	**10**	**5**	**68**	**4**	**1**	**138**

Source: Field Data, 2015

Table 5:2 above shows that, eating styles for the youth differ, it depends on the situation, these observed during the study, respondents from universities/colleges, responded by 28 frequencies, reported that, they depends on the circumstances especially during exams periods, they do not have time enough to eat properly as their have to rash in their classes ready for exams. These responds observed almost all groups are in studies. Those who taken slow their meals, said done only when there are at home places they have time to eat slowly, enjoying their meals as per their choices and well prepared by their parents/guardians. According to the Table above, still show that there is a need to provide knowledge to the youth on the importance of eating speed, 4 students reported that they do not know and one said that does not know at all, as the study was representing all students, thus there is a need to provide proper information concerning the importance of eating speed to let food digestion to take place as needed.

5.3 Importance of Nutritious food to the Youth

As the study were dealing with educational institutes, it observed that, those with neutral knowledge 37% (51) from 138 respondents, this shows that still there is a gap of knowledge on the importance of taking nutritious meals on achieving their academic performance. It seems that fruits have natural sugar, this glucose needed to feed brain. Thus, student to perform better academically needs natural fruits, vegetables and healthy meals which consisted from three main of food groups.

Gropper, et al, (2016), defined nutrition as a process of getting food into your body and using it as raw materials for growth, fuel for energy and vitamins and minerals that keep your body healthy and function properly. Therefore, good nutrition means a healthy diet. It gives your body the right amount of energy. Good nutrition will also provide phytochemicals and antioxidants that will help keep you feeling young, looking great and even disease-free (Gropper, et al, 2016). The study found that, only 8.7% (12) of respondents were very knowledgeable on the importance of food, 33.3% (46) were knowledgeable, 37% (51) were neutral, while 21% (29) were not knowledgeable about the importance, this implies that still there is a need to assist those who does not see the importance. See Table 4.2. As every youth needs to have health body and mind on maintaining his/her health and as far as educational institute were concerned more emphasize needed to save the coming generation.

5.4 5.4 Consequences of Poor Nutrition

On the finding we found that, 31.9% (44) respondents understood that, when the student missed balanced diet shall perform poorly in academics matter. The same figure seen on

overweight and underweight was 31.9% (44). Worse more, overweight is a predisposing factor of Non-Communicable Diseases (NCDs); such as Heart diseases, high blood pressure, obesity and Diabetes. Other consequences were Marasmus and Kwashiorkor found that 21.7% (30). Gropper, et al (2016) found that, good nutrition will provide phytochemicals and antioxidants that will help human feeling young, looking great and even disease-free.

Ramos and Stein, (2002), from their study stated the importance of social context in nutrition, as food experience influences eating behaviour, infant socio-emotional development, and quality of parent child relationship, thus poor nutrition also can contributes to anti-social habit which may cause someone to be antisocial cannot participate in any social gathering in the community which can lead to be isolated, depression and stress.

Also, Rogers, (1983), identified three types of knowledge about nutrition: i) awareness (e.g. diet-disease relationships), ii) knowledge of principles (eg., cholesterol found in animal foods only, lemon are good source of vitamin C, high intake of fruits and vegetables can prevent hypertension, iii) how to use knowledge (e.g., how to select food with less fat or how to read a food labels accurately). Rosebloom, Jonnalagadda, (2002) concluded that; nutrition knowledge impacts attitude and eating habits among society and nutritional knowledge can be obtained from many sources including magazines, internets and school curriculums.

5.5 Summary of Findings

The response was good because all respondents *i.e.* one hundred and thirty-eight (138) students responded to the research questions. Regarding the demographic characteristics of respondents, students between 14 and 24 years constituted the majority of respondents, i.e. 47.1% (65 students) and most of them were primary school students. However, male students dominated; they were more than half of respondents (58.7%).

The good news from this study was that almost all respondents (72%) were knowledgeable about nutrition and majority of them i.e. 87% and 56.5% enjoy their meals and care about eating time respectively, which indicates that they get enough nutrients for their health. However, the majority of respondents 62.3% (86 students) does not know if a balanced diet is important to youths and should be taken regularly for good academic performance.

Regarding the eating patterns, the results showed that most of respondents do not eat properly because a larger number of respondents 58.7% (81 students) and 1.4 (2 students) eat only twice or once per day, which is not enough for their health. Results about the knowledge of respondents about the three main groups of foods, contradicted with the results about knowledge about nutrition because very few respondents 7 students (5.1%) have the knowledge about the three main groups of foods *i.e.* protective, body building and energy providing foods.

The results about the different types of foods and health benefits gained from eating them also matched the results about the knowledge about nutrition because almost all 98

students (99.6%) knew that the body needs different types of foods to health. However, very few, 12 students (8.7%) were knowledgeable about the importance of nutritious foods to their health and the impact they have on their academic performance. 110 students (79.7%) and all respondents 138 students (100%) obtain information about nutrition from their schools' or colleges' libraries and knew the consequences of poor nutrition respectively, which implies that schools and colleges are doing a lot of efforts to educate their students about nutrition and healthy eating habits.

5.6 Conclusion

The only factors associated with nutrition knowledge were age, with young pupils significantly demonstrating higher levels of knowledge than their older counterparts, another factor was source of information, those received information through their curriculum were knowledgeable than those who did not include nutrition knowledge in their curriculum.

According to the study done by Fahlman et al, 2008), knowledge on nutrition is highly needed for the students, venderors and cooks to make them aware of what they are supposed to provide to their customers in order to maintain their healthy bodies. It is high time now for the Government to use Social Workers at schools and colleges premises as they are responsible for the health of human beings as are counsellors, advocators, teachers, guardians, problems solver, etc.

.

5.7 Recommendations

In one of the statement FAO (2005) reported that, "The nutrition knowledge acquired throughout school life is a factor of interaction between the school curriculum, school environment, the family and community". Thus on improving nutrition knowledge it seems that, four areas have to be considered: The Class room, curriculum, school environment the family, and the community. The study also suggested that, the most important professionals who are keen and responsible for individuals, families, and communities are Social Workers who can play a big role on advocating, counselling, teaching, coaching and providing guidance in maintaining healthy communities, raising socio-economies through heath teachings.

The researcher provides the following recommendations to improve the situation:

(i) Nutrition education programs commonly known as health interventions should be provided to students because they have significant effect in the development of healthy eating habits. Besides, it can make them understand consequences brought by non-nutritious foods to academic performance. The emphasise at this point is to maintain the level of nutrition knowledge to all school children from Primary school up to University/College levels. Social workers have to play their roles as are doing helping professionals who can intervene with individuals, families, and communities.

(ii) Health educators, social workers, nutritionists, administrators, reporters, politicians, etc. should consider using schools or colleges to provide nutrition education for the following reasons:

- Schools provide safe and low-cost health service interventions
- Schools reach a high proportion of children and adolescents.

- Schools provide opportunities to practice healthy eating and food safety.
- Schools can teach students how to resist unhealthy social pressures since eating is a socially learned habit that is influenced by social pressures.
- Skilled personnel are available to provide follow-up and guidance – after appropriate training of students, teachers and other staff.
- Nutrition interventions in schools benefit the entire community.
- Education and healthy nutrition for girls has a positive impact on family health

(iii) Schools and donors should consider establishing school feeding programs. These programs are good because they increase food availability to the youth who needed. Besides, these programs decrease short-term hunger, thus enabling youth to concentrate on their studies,

(iv) Health educators, social workers, nutritionists, administrators, reporters, politicians, etc. should ensure that nutrition education in schools always applies the tri-partite curriculum approach (i.e. link nutrition education in the classroom with learning in the school environment, home and community).

5.8 Areas for Further Studies

Future research can contribute on establishing the relationship between eating habits, self-esteem and academic achievement among primary and secondary school students and/or to identify social and psychological factors affecting eating habits among university students in Tanzania.

REFERENCES

Abdollahi, M., Amini, M., Kianfar, H., Dadkhah-Piraghag, M., Eslami-Amirabadi, M., Zoghi, T., Assasi, N. and Kalantari, N. (2008). "Qualitative Study on Nutritional Knowledge of Primary-School Children and Mothers in Tehran", *Eastern Mediterranean Health Journal*, 14(1):82-9. Retrieved on 15th June, 2016 from https://www.ncbi.nlm.nih.gov/pubmed/18557454.

Ammerman, A. S., Lindquist, C. H., Lohr, K. N., and Hersey, J. (2002). The Efficacy of Behavioral Interventions to Modify Dietary Fat and Fruit and Vegetable Intake: A Review of the Evidence, *Prev Med.*, 35, 25-41. Retrieved on 22nd May, 2016 from https://www.ncbi.nlm.nih.gov/pubmed/12079438.

Bhattacherjee, A. (2012). *Social Science Research: Principles, Methods, and Practices.* Second Edition, Florida: University of South Florida, USA. Retrieved from http://scholarcommons.usf.edu/cgi/ on 5th June, 2016.

Blumberg, B., & Cooper, D. R., & Schindle, P. S (2008). *Business Research Methods*. New York: McGraw-Hill International.

Chapman, K. M., Ham, J. O., Liesen, P. and Winter, L. (1995). Applying Behavioural Models to Dietary Education of Elderly Diabetic Patients. *Journal of Nutrition Education,* 27, 75-79. Retrieved from www.scielo.br/scielo.php?pid=S1413-81232016000200449&script=sci on 24th June, 2015.

Contento, I. R. (2007). *Nutrition Education: Linking, Research, Theory and Practice.* Columbia: Jones and Barret Publishers.

Daniels, S. R., Arnett, D. K., Eckel, R. H., Gidding, S. S., Hayman, L. L., Kumanyika, S., *et al*. (2005). Overweight in Children and Adolescents: Pathophysiology,

Consequences, Prevention, and Treatment, *Circulation: Journal of the American Heart Association*, 2005, (111), 2000-2012. Retrieved on 7th July, 2015 from circ.ahajournals.org/content/111/15/1999.

Eun-Jeong, H, and Caine-Bish, N. (2009). Effect of Nutrition intervention using a general nutrition course for promoting fruit and vegetable consumption among colleges students. *Journal of Nutrition Education and Behaviour*, 41(2), 103 - 109. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/19304255 on 9th June, 2016.

Fahlman, M. M., Dake, J. A., McCaughtry, M. and Martin, J. (2008) A pilot study to examine the effects of a Nutrition intervention on nutrition knowledge, behaviours and efficacy expectation in middle school children. *Journal of school Health* 78 (4) 216 – 222. Retrieved on 11th May, 2016 from https://www.ncbi.nlm.nih.gov/pubmed/18336681.

FAO, (2005a). *Nutrition Education in Primary School: A planning Guide for Curriculum Development*, Rome: FAO.

Flynn, K. (2015). Why Should Students Eat Healthy? Accessed on 9th December 2015 at http://www.livestrong.com/article/377513-why-should-students-eat-healthy/

Gajre, N. S., Fernandez, S., Balakrishna, N. and Vazir, S. (2008), "Breakfast Eating Habit and its Influence on Attention Concentration, Immediate Memory and School Achievement", *Indian Paediatrics*, 45(10), 824–828. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/18948652 on 9th April, 2016.

Gamm, L., Castillo, G. and Williams, L. (2010), "Education and community-based programs in rural areas: A literature review", In Rural Healthy People 2010: A

Companion Document to Healthy People, Vol. 3. Gamm, L., and Hutchison, L., Editors, College Station. Texas: A&M.

Harnack, L.; Block, G.; Lane, S. (1997). Influence of Selected Environmental and Personal Factors on Dietary Behaviour for Chronic Disease Prevention: A Review of the Literature. *Journal of Nutrition Education,* 29(6), 307. Retrieved on 7th May, 2016 from www.nature.com › Journal home ›.

Hart, K. H., Bishop, J. A., Truby, H. (2002), "An Investigation into School Children's Knowledge and Awareness of Food and Nutrition", *Journal of Human Nutrition and Dietetics*, 15(2), 129–140. Retrieved on 22nd November, 2015 from https://www.ncbi.nlm.nih.gov/pubmed/11972742.

Healthy People (2010), "Midcourse Review", Department of Health and Human Services, Washington: Office of Disease Prevention and Health Promotion

Intervention MICA (2014), "Building Healthy Communities", retrieved from http://health.mo.gov/data/InterventionMICA/index (iframe).html on 1st May, 2016.

Kimambo, I. N. and Temu, A. J. (1969), "A History of Tanzania", Eds, East African Publishing House, Nairobi, Kenya.

Kothari C.R (2004). *Research Methodology: Methods and Techniques.* Second Edition. New Delhi: New Age International (P) Ltd.

Laessle, R. G., Uhl, H., Lindel, B., Müller, A. (2001), "Parental Influences on Laboratory Eating Behavior in Obese and Non-Obese Children", *International Journal of Obesity Related Metabolism Disorders,* 25(1), 60-62.

Lazarou, C., Kalavana, T., Matalas, A. L. (2008). "The influence of parents' dietary beliefs and behaviours on children's dietary beliefs and behaviours", *The CYKIDS Study, Appetite*, 51, 690-696.

Leme, A. C. and Philippi, S. T. (2013), "Teasing and Weight-Control Habits in Adolescent Girls", *Revista Paulista de Pediatria*, 31, 431-436. Retrieved from *www.scielo.br/scielo.php?script=sci_arttext&pid../* on 25th July, 2016.

MacLellan, D., Taylor, J. and Wood, K. (2008). Food Intake and Academic Performance among Adolescents, *Canadian Journal of Dietetic Practice and Research*, 69(3), 141–144. Retrieved from europepmc.org/abstract/MED/18783639 on 17th July, 2016.

Mark, H. B., Robert, S. P., Thomas, V. J., Justin, L. K. and Berkwits, M. (2006). *The Merk Manual of Diagnosis and Therapy",* 18th Edition, Nevada: Merck Publisher.

Martín, A. R. 1., Nieto, J. M., Jiménez, M. A., Ruiz, J. P., Vázquez, M. C., Fernández, Y. C., Gómez, M. A. and Fernández, C. C. (1999). Unhealthy Eating Behavior in Adolescents, *PubMed* Vol. 15, No. 7, pp. 643-648. Retrieved on 6th June, 2016 from https://www.ncbi.nlm.nih.gov/pubmed/10543354.

Mbithe, D. (2008) Promoting Nutrition Education intervention in rural and urban Primary School in Machakos District Kenya; Focus on school gardens, Un published Doctoral Dissertation, Kenyatta University, Nairobi Kenya.

Mennella, J. A., Nicklaus, S., Jagolino, A. L. and Yourshaw, L. M. (2008). Variety is the Spice of Life: Strategies for Promoting Fruit and Vegetable Acceptance During Infancy, *Physiological Behavior*; 94(1), 29-38. Retrieved on 17th June, 2016 from https://www.ncbi.nlm.nih.gov/pubmed/18222499.

Michelle, F. D., Asbridge, M. and Veugelers, P. J. (2008). Diet Quality and Academic Performance, *Journal of School Health*, 78(4), 209-215. Retrieved on 11th March, 2016 from https://www.ncbi.nlm.nih.gov/pubmed/18336680.

Mselle, L. S, Kinabo, J. L. and Nyaruhucha, C. N. (2013). Contribution of Care, Hygiene and Sanitation to Maternal and Child Nutrition Status in Kilosa District, Sokoine University of Agriculture; *LISHE, Tanzania Food and Nutrition Journal*, 13(1), 63-75. Retrieved on 11th March, 2016 from http://www.cmamforum.org/Pool/Resources/FNJT-LISHE-Tanzania-J-Dec-2013.pdf.

Neumark-Sztainer, D., Butler, R. and Palti, H. (1995). Personal and Socio-environmental Predictors of Disordered Eating among Adolescent Female. *Journal of Nutrition Education*, 28(3), 195-201. Retrieved on 4th June, 2016 from eurekamag.com/pdf.php?pdf=002918486.

Palfreyman, Z., Haycraft, E. and Meyer, C. (2012). Development of the Parental Modeling of Eating Behaviours Scale (PARM): Links with Food Intake among Children and their Mothers, *Maternal and Child Nutrition*, 28(3), 195-201. Retrieved from https://eurekamag.com/pdf.php?pdf=002918486 on 4th June, 2016.

Ramos, M. and Stein, L. M. (2002). Development Children's Eating Behavior, *Journal de Pediatria*, 76(3), 229-237. Retrieved on 11th September, 2015 from http://www.jped.com.br/conteudo/00-76-S229/ing.pdf.

Rees, J. (2008). Eating Disorders during Adolescence: Nutritional Problems and Interventions, Departments of Health Services and Paediatrics, Maternal Child Health and Adolescent Medicine, University of Washington, Seattle,

Washington. Retrieved from http://staff.washington.edu/jrees/ch1edado.html on 12th July, 2015.

Rossi, A., Moreira, E. A., Rauen, M. S. (2008), "Determinants of Eating Behavior: A Review Focusing on the Family", *Review of Nutrition*, Vol. 21, pp. 739-748.

Salvy, S. J., Elmo, A., Nitecki, L. A., Kluczynski, M. A. and Roemmich, J. N. (2011). Influence of Parents and Friends on Children's and Adolescents' Food Intake and Food Selection, *American Journal of Clinical Nutrition*, 93, 87-92. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/21048059 on 12th July, 2015.

Schacht, M., Richter-Appelt, H., Schulte-Markwort, M., Hebebrand, J. and Schimmelmann, B. G. (2006). Eating pattern inventory for children: a new self-rating questionnaire for preadolescents, *Journal of Clinical Psychology*, 62, 1259-1273. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/16897691 on 14th June, 2016.

Schwartz, C., Scholtens, P. A., Lalanne, A., Weenen, H. and Nicklaus, S. (2011), Development of Healthy Eating Habits Early in Life. Review of Recent Evidence and Selected Guidelines, *Appetite*, 57(3), 796-807. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/21651929 on 14th June, 2016.

Shermen, J. and Muehlhoff, E. (2007) Developing a Nutrition and Health Education Program for Primary schools in Zambia. *Journal of Nutrition Education and Behaviour*. 39, 333 – 334 Retrieved on 21st November, 2015 from https://www.ncbi.nlm.nih.gov/pubmed/17996629.

Story, M., Nuemark-Sztainer, D. and French, S. (2002). Individual and Environmental Influences on Adolescent Eating Behaviours, *Journal of American Dietetic*

Association, 102(3), 40-51. Retrieved on 25th September, 2016 from www.andjrnl.org/article/S0002-8223(02)90421-9/abstract.

Tarras, H. L. (2005). Nutrition and Student Performance at School, *Journal of School Health*, 75(6), 199-213. Retrieved on 11th November, 2015 from http://onlinelibrary.wiley.com/doi/10.1111/j.1746-1561.2005.00025.x/full.

The United Republic of Tanzania (2013). 2012 Population and Housing Census, Population Distribution by Administrative Areas, National Bureau of Statistics Dar es Salaam and Office of Chief Government Statistician, Zanzibar. Dar es Salaam: Government Printer.

United Republic of Tanzania (2012). Guideline for Councils for the Preparation on Plan and Budget for Nutrition", 2nd edition. Dar es Salaam: Government Printer.

Velazquez, C. E., Pasch, K. E., Raniit, N., Mirchandan, G. and Hoelscher, D. M. (2011). Are Adolescents' Perceptions of dietary practices associated with their dietary behaviours? *Journal of American Dietetic Association,* 111, 1735 -1740. Retrived from europepmc.org/abstract/med/22027057 on 6th May, 2016.

Viana, V., Sinde, S., Saxton, J. C. (2008), "Children's Eating Behaviour Questionnaire: Associations with BMI in Portuguese Children", *British Journal of Nutrition*, 100, 445-450. Retrieved on 2nd October, 2015 https://www.ncbi.nlm.nih.gov/pubmed/18275626.

Vivas, A, Gelaye, B. Aboset, N, Kumie, A, Berhane, Y & William, MA (2010) Knowledge, Attitude and Practice (KAP) of hygiene among School children in Angolela, Ethiopia. *Journal of Preventive Medicine and Hygiene,* 51(2), 73 – 79. Retrieved on 22nd November, 2015 from onlinelibrary.wiley.com/doi/10.1046/j.1440-6047.11.supp3.7.x/abstract

Wardle, J., Guthrie, C. A., Sanderson, S., and Rapport, L. (2001), Development of the Children's Eating Behaviour Questionnaire. *Journal of Child Psychology Psychiatry*, 42, 963-970. Retrieved on 22nd November, 2015 from http://onlinelibrary.wiley.com/doi/10.1111/1469-7610.00792/full.

Worsely, A (2002). Nutrition Knowledge and food consumption: Can Nutrition Knowledge change food behaviour? *Journal Asia Pacific Journal of Clinical Nutrition*, 11, 5579 – 5585. Retrieved on 22nd November, 2015 from http://onlinelibrary.wiley.com/doi/10.1046/j.1440-6047.11.supp3.7.x/abstract.

Yeager, R. (1989), "Tanzania: An African Experiment", 2nd Edition,, Dartmouth London: West view Press.

APPENDICES

APPENDIX 1: CHECKLIST FOR OBSERVATION

This observation checklist covers specific school/college/institute's premises at kiosk/canteen for the researcher to observe and document what the youth eat. Researcher will observe cooks and servers to check the environment and the way foods are prepared and served.

The exercise should only be done after approval by the Head of School/College/Institute.

2. Specific Information

1.	Does the environment look healthy?	Yes very clean:	1	
		Yes it is clean:	2	
		No very dirty:	3	
		No is dirty:	4	
2.	Any other comments or observation about the environment (should base on the cleanliness of the utensils (plates, spoon, cups, glasses], cleanliness of the servers)			
3.	Is the uncooked food (e.g. vegetables, fruits) wash before cooking?	Yes:	1	
		No:	2	
4.	Do the youth wash their hands with soap and running water before taking their food?	Yes:	1	
		No:	2	
5.	Is the price affordable to the youth for the meal taken?	Yes:	1	
		No:	2	
6.	Is the food taken satisfying the youth's hunger?	Yes:	1	
		No:	2	
7.	Does the youth take a balanced diet during tea break time?	Yes:	1	
		No:	2	
8.	Does the lunch taken by the youth is a well balanced diet	Yes:	1	
		No:	2	
9.	Does the food preference depend on the food price or type of food ordered?	Yes:	1	
		No:	2	
10.	Are fruits included as part of the meal for the youth	Yes:	1	
		No:	2	

APPENDIX 2: FOCUS GROUP DISCUSSION QUESTIONS

1. Define nutrition
2. Describe what you consider to be a balanced diet
3. Tell me the importance of foods in the youth's body
4. Mention types of foods that you know
5. Mention the advantages of nutrition for school/college going youth.
6. Are you taken a food to satisfy hunger or to make your body healthy?
7. Which place do you do you get information about food please tick one area

   At home place ( )

   At school/college ( )

   Health facility ( )

8. From the above response, kindly explain why you prefer at that place.

   (i) Those prefer at home why?.....

   (ii) Those prefer at the school/college why?.....

   (iii) Those prefer to the health facility, why?.....

9. Do you know that there are complications when a youth does not taking balanced diet?

   Yes ( ) No ( )

10. If yes to the above answer, mention the consequences resulting the youth does not take balanced diets.

    (a) .....

    (b) .....

Thank you very much for your good response!

APPENDIX 4: QUESTIONNAIRE

THE OPEN UNIVERSITY OF TANZANIA

FACULTY OF ARTS AND SCIENCES

DEPARTMENT OF SOCIOLOGY AND SOCIAL WORK

Research Title: **Investigating Opinions and Views on Nutrition and Eating Habits of Youths Aged Between 14 and 24 Years: A Case Study of Educational Institutions within the Ubungo Ward in Kinondoni Municipal, Dar es Salaam City**

My name is Leonida S. Luballa. I am an employee of the University of Dar es Salaam Centre. Currently, I am pursuing the Master Degree of Social Work at the Open University of Tanzania. I am doing a study on opinions and views on nutrition and eating habits of students aged between 14 and 24 years in primary and secondary schools within the Ubungo Ward in Kinondoni Municipal, Dar es Salaam City. To accomplish the study successful, I kindly request for your inputs, which will help me to complete my study as a result help to improve youths hence, socio-economic development of country.

I declare and assure you all that the information you provide will be highly confidentially maintained and you are allowed to agree or disagree to be among of respondents.

Put a tick (√) to what you consider is a right answer and fill the dotted line as requested.

1. Age: .....
2. Sex: Male ( ) Female ( )
3. Level of education: .....
4. Definition of nutrition:

   .....
5. Do you enjoy when you take your meal?

   .....

   .....
6. Do you prefer to eat your food faster or slowly?

   .....

   .....
7. Is there any importance for the youth who is studying to eat balanced meal?

   If yes, clarify:

   .....
8. How many meals do you take per day?

   .....

   .....
9. Mention three groups of foods which you know.

   .....

   .....
10. There are many types of foods, mention types of foods you know.

    .....

    .....

    .....

11. Mention the importance of nutritious foods for the youth.

.....

.....

12. Where did you learn about nutrition?

.....

.....

13. Mention the consequences of unhealthy diets.

.....

.....

.....

.....

Thank you very much for your kind cooperation. Be blessed!

APPENDIX 5 FOMU YA DODOSO

CHUO KIKUU HURIA CHA TANZANIA, IDARA YA SAYANSI

NA USTAWI WA JAMII

SOMO: UTAFITI WA KUANGALIA UELEWA NA MAWAZO YA VIJANA WENYE UMRI WA MIAKA 14 – 24 KUHUSU LISHE NA TABIA YA ULAJI, KATIKA MANISPAA YA KINONDONI, MKOA WA DAR ES SALAAM

Mimi ni **Leonida Luballa,** ninafanya kazi katika Chuo Kikuu cha Dar es Salaam katika Kituo cha Afya. Kwa sasa ninasoma masomo ya shahada ya pili katika chuo kilichotajwa hapo juu. Ninafanya utafiti katika maswala ya lishe, kuangalia uelewa na mawazo ya vijana wenye umri kuanzia miaka 14 – 24 kuhusu lishe. Vijana walioko vyuoni, shule za Msingi na sekondari katika baadhi ya shule na vyuo ndani ya Manispaa ya Kinondoni. Katika kufanikisha vema utafiti huu, ninaomba ushirikiano wako na mawazo yako ambayo yatasaidia kwa vijana na serikali kwa ujumla wake.

Ninakuhakikishia kuwa, mawazo na majibu yako yote yatahifadhiwa kwa usiri mkubwa, na unaruhusiwa kukubali au kukataa kuwa mmoja wa washiriki wa utafiti huu.

Weka alama ya (√) kwa jibu ambalo unaona ni sahihi na jaza nafasi zilizowazi kama ulivyoulizwa.

1. Umri: .....
2. Jinsia:.....
3. Kiwango chako cha elimu: .....

4. Nini maana ya Lishe

.....

5. Je unafurahia unapokula mlo wako?

.....

6. Ukiwa kama kijana unapenda kula chakula kwa haraka au taratibu?

.....

7. Kuna umuhimu gani wa kijana anayesoma kula mlo uliokamilika

.....

8. Unakula milo mingapi kwa siku?.....

9. Taja makundi matatu ya chakula unayoyafahamu

.....

10. Kuna aina nyingi za vyakula. Taja aina ya zozote unayozifahamu

.....

11. Taja umuhimu wa kula chakula bora (lishe)

.....

12. Uliipatia wapi elimu ya chakula bora (lishe)

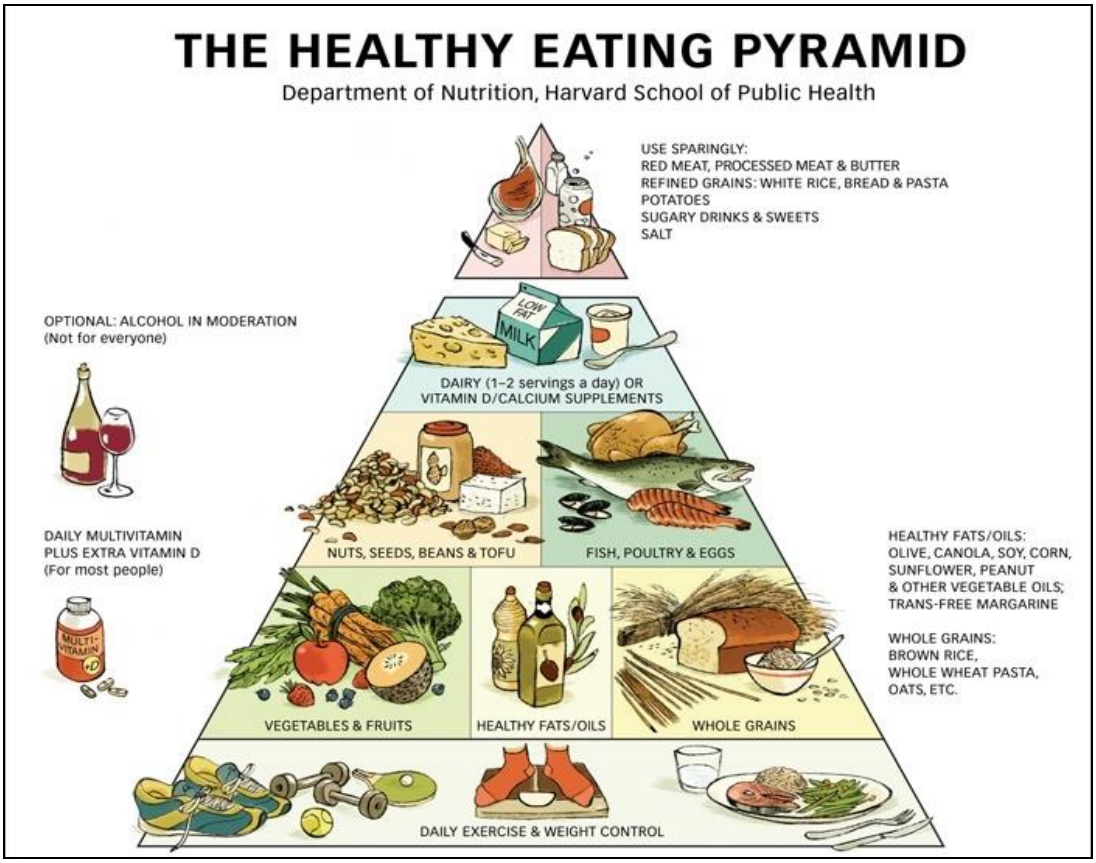
.....

13. Taja madhara yatokanayo na kula lishe duni

.....

Asante sana kwa ushirikiano wako, Ubarikiwe sana

APPENDIX 6: FOOD PYRAMID



The Healthy Eating Pyramid sits on a foundation of daily exercise and weight control. Why? These two related elements strongly influence your chances of staying healthy. They also affect what you eat and how your food affects you. Thus youth needs to have proper knowledge about nutritious meal.

APPENDIX 7: RESEARCH CLEARANCE LETTER

THE OPEN UNIVERSITY OF TANZANIA
DIRECTORATE OF RESEARCH, PUBLICATIONS, AND POSTGRADUATE STUDIES

P.O. Box 23409 Fax: 255-22-2668759Dar es Salaam, Tanzania,
http://www.out.ac.tz

Tel: 255-22-2666752/2668445 ext.2101
Fax: 255-22-2668759,
E-mail: drpc@out.ac.tz

27/05/2015

To The District Executive Director,

Kinondoni Municipal - Dar es Salaam.

RE: RESEARCH CLEARANCE

The Open University of Tanzania was established by an act of Parliament no. 17 of 1992. The act became operational on the 1st March 1993 by public notes No. 55 in the official Gazette. Act number 7 of 1992 has now been replaced by the Open University of Tanzania charter which is in line the university act of 2005. The charter became operational on 1st January 2007. One of the mission objectives of the university is to generate and apply knowledge through research. For this reason staff and students undertake research activities from time to time.

To facilitate the research function, the vice chancellor of the Open University of Tanzania was empowered to issue a research clearance to both staff and students of the university on behalf of the government of Tanzania and the Tanzania Commission of Science and Technology.

The purpose of this letter is to introduce to you **Ms. Luballa S Leonida, Reg. No. PG2014008104** who is a Master student at the Open University of Tanzania. By this letter **Ms. Luballa S Leonida,** has been granted clearance to conduct research in the country. The title of **her** research is **"Investigating Views or Pinions on Nutrition and Eating Behaviour among Youth Aged 14 – 24 years.**". Research will be conducted in Kinondoni District – Dar es Salaam.

The period which this permission has been granted is from 27/05/2015 to 29/07/2015.

In case you need any further information, please contact: The Deputy Vice Chancellor (Academic); The Open University of Tanzania; P.O. Box 23409; Dar es Salaam. Tel: 022-2-2668820

We thank you in advance for your cooperation and facilitation of this research activity.
Yours sincerely,

Prof Shaban Mbogo

For: VICE CHANCELLOR

THE OPEN UNIVERSITY OF TANZANIA

APPENDIX 8: RESEARCH PERMIT LETTER

KINONDONI MUNICIPAL COUNCIL
ALL CORRESPONDENCES TO BE ADDRESSED TO THE MUNICIPAL DIRECTOR

Tel: 2170173
Fax: 2172606

In reply please quote:

Ref. KMC/ED/SS/R.18/1

MUNICIPAL DIRECTOR
KINONDONI MUNICIPAL COUNCIL
P. O. BOX 31902
2 BARABARA YA MOROGORO
14883 DAR ES SALAAM

Date 16/06/2015

Headmistress/Headmaster,
Alpha High School

REF: RESEARCH PERMIT

Refer the heading above.

Ms. **Luballa S. Leonida,** from OPEN **UNIVERSITY OF TANZANIA** is conducting a research on **"EATING BEHAVIOUR AMONG YOUTH AGED 14 – 20 YEARS IN SECONDARY SCHOOL".**

She has been permitted to under take a research in your school.

By this letter you are asked to give him/her required assistance to the said researcher.

Wishing you all the best of luck.

Mwl. Neema M. Maghembe
FOR MUNICIPAL SECONDARY EDUCATION OFFICER
KINONDONI MUNICIPAL COUNCIL

APPENDIX 9 RESEARCH ATTACHMENT LETTER

KINONDONI MUNICIPAL COUNCIL

ALL CORRESPONDENCES TO BE ADDRESSED TO THE MUNICIPAL DIRECTOR

Tel: 2170173
Fax: 2172606

In reply please quote:

Ref. KMC/F.6/5

MUNICIPAL DIRECTOR
KINONDONI MUNICIPAL COUNCIL
P. O. BOX 31902
2MOROGORO ROAD
14883 DAR ES SALAAM

Date 16/06/ 2015

Ms Luballa S. Leonida,
Open University,
P. O. Box 23409,
DAR ES SALAAM.

RE: **RESEARCH ATTACHMENT**

Refer to the above heading.

I am pleased to inform you that your above request has been considered by the Municipal Director, and has offered you a place to conduct research attachment.

Upon receipt of this letter, please report to the **Municipal Education Officer Secondary and Primary** commencement of your research attachment.

Hoping to see you soon.

.....
A. B. Tutuba
For: **THE MUNICIPAL DIRECTOR**
KINONDONI

Copy : Vice Chancellor,
Open University ,
P. O. Box 23409,
DAR ES SALAAM.

APPENDIX 10: LETTER OF PERMISSION TO DO RESEARCH

HALMASHAURI YA MANISPAA YA KINONDONI
BARUA ZOTE ZITUMWE KWA MKURUGENZI WA MANISPA

Simu Na: 2170173
Fax Na: 2172606
Unapojibu tafadhali taja :

Kumb Na. KMC/ED/U.21/14

MKURUGENZI WA MANISPAA,
HALMASHAURI YA MANISPAA YA KINONDONI,
S.L.P 31902,
2BARABARA YA MOROGORO
14883 DAR ES SALAAM

19/06/2015

Mwalimu Mkuu,
Shule ya Msingi **Mlimani, Mugabe,Mapambano,**
s.l.p 72770,
DAR ES SALAAM

YAH: KIBALI CHA KUFANYA UTAFITI.

Husika na somo hapo juu.

Ms Luballa S. Leonida kutoka **Open University** ameruhusiwa na Mkurugenzi wa Halmashauri ya Manispaa ya Kinondoni kufanya utafiti juu ya "**Inivestigating views on Nutrition and Eating Behaviour among Young Age 14-24 year**" kuanzia tarehe **27/052015** hadi **29/07/2015** kwenye kituo chako cha kazi.

Hivyo tunategemea utampatia ushirikiano kwa muda wote wa zoezi hilo huku taratibu na sheria za shule zikizingatiwa.

Ahsante.

.....
P.Ngarammbe
Kny AFISA ELILMU MSINGI MANISPAA KINONDONI

APPENDIX 11: LETTER TO ASK SPONSORSHIP

Leonida S. Luballa,

Kituo cha Afya cha Chuo Kikuu,

S. L. P. 35074,

Dar es Salaam.

14.08.2015

Naibu Makamu wa Chuo Kikuu, Utafiti,

S. L. P. 35091,

Dar es Salaam.

K K: Kimu Naibu Mkurugenzi,

Huduma za Afya,

Kituo cha Afya cha Chuo Kikuu.

YAH: MAOMBI YA PESA ZA KUNIWEZESHA KUFANYA UTAFITI KUHUSU UCHUNGUZI WA UFAHAMU KWA VIJANA WENYE UMRI WA KUANZIA MIAKA 14 – HADI 24 KUHUSU LISHE BORA KATIKA MANISPAA YA KINONDONI

Tafadhali rejea somo la hapo juu.

Mimi ni mfanyakazi katika kituo cha Afya hapa Chuo Kikuu cha Dar es Salaam. kwa sasa najiendeleza kimasomo katika chuo Kikuu Huria muda wa jioni, nachukua shahada ya pili ya *"Kuangalia/kuchunguza uelewa/maoni ya vijana wenye umri kuanzia miaka 14 – 24 kuhusu Lishe na tabia za ulaji"*.

Niko katika hatua za mwisho za kuhitimu masomo yangu ambayo nimelipia mwenyewe shilingi milioni nne (4,000,000/=), bado nadaiwa laki mbili kukamilsha ada. Nina heshima kuleta ombi langu kwako unisaidie kifedha ili niweze kukamilisha ufafanuaji wa data ambao nimeshaanza na hatimae kuandika ripoti ili nikamilishe vema masomo.

Njtashukuru sana ukiniwezesha kiasi cha shilingi milioni moja (1,000,000/=) ili iniwezeshe kukamilisha utafiti na kutayarisha vitabu vitano vinavyohitajika ili nikamilishe vema mafunzo haya muhimu.

Nimatumaini yangu makubwa kuwa ombi langu litafikiriwa. Natanguliza shukrani zangu za dhati kwako.

Asante, nawasilisha.

Sr. Luballa L. S.